Manufacturers Must Report Sales and Pay 5% Tax Monthly

(*Concluded from Page 1, Column 5*)

or accessories for such refrigerator components sold on or in connection therewith or with the sale thereof) except when sold as component parts of complete refrigerators or refrigerating or cooling apparatus. Under regulations prescribed by the Commissioner, with the approval of the Secretary, the tax under this subsection shall not apply in the case of sales of any such refrigerator components by the manufacturer, producer, or importer to a manufacturer or producer of refrigerators or refrigerating or cooling apparatus. If any such refrigerator components are resold by such vendee otherwise than on or in connection with, or with the sale of, complete refrigerators or refrigerating or cooling apparatus, manufactured or produced by such vendee, then for the purposes of this section the vendee shall be considered the manufacturer or producer of the refrigerator components so resold.

Sec. 618. Definition of Sale

For the purposes of this title, the lease of an article shall be considered the sale of such article.

Sec. 619. Sale Price

(a) In determining, for the purposes of this title, the price for which an article is sold, there shall be included any charge for coverings and containers of whatever nature, and any charge incident to placing the article in condition packed ready for shipment, but there shall be excluded the amount of tax imposed by this title, whether or not stated as a separate charge. A transportation, delivery, insurance, installation, or other charge (not required by the foregoing sentence to be included) shall be excluded from the price only if the amount thereof is established to the satisfaction of the Commissioner, in accordance with the regulations.

(b) If an article is—

(1) sold at retail;

(2) sold on consignment; or

(3) sold (otherwise than through an arm's-length transaction) at less than the fair market price;

the tax under this title shall (if based on the price for which the article is sold) be computed on the price for which such articles are sold, in the ordinary course of trade, by manufacturers or producers thereof, as determined by the Commissioner.

(c) In the case of (1) a lease, (2) a contract for the sale of an article wherein it is provided that the price shall be paid by installments and title to the article sold does not pass until a future date notwithstanding partial payment by installments, or (3) a conditional sale, there shall be paid upon each payment with respect to the article that portion of the total tax which is proportionate to the portion of the total amount to be paid represented by such payment.

Sec. 620. Sale of Articles for Further Manufacture

Under regulations prescribed by the Commissioner with the approval of the Secretary, no tax under this title shall be imposed upon any article (other than a tire or inner tube, or an article taxable under section 604, relating to the tax on furs) sold for use as material in the manufacture or production of, or for use as a component part of, an article to be manufactured or produced by the vendee which will be taxable under this title or sold free of tax by virtue of this section. If the vendee resells an article sold to him free of tax under this section, then for the purpose of this title he shall be considered the manufacturer or producer of such article.

Sec. 621. Credits and Refunds

(a) A credit against tax under this title, or a refund, may be allowed or made—

(1) to a manufacturer or producer, in the amount of any tax under this title which has been paid with respect to the sale of any article (other than a tire or inner tube) purchased by him and used by him as material in the manufacture or production of, or as a component part of, an article with respect to which tax under this title has been paid, or which has been sold free of tax by virtue of section 620, relating to sales of articles for further manufacture.

(2) to any person who has paid tax under this title with respect to an article, when the price on which the tax was based is readjusted by reason of return or repossession of the article or a covering or container, or by a bona fide discount, rebate, or allowance; in the amount of that part of the tax proportionate to the part of the price which is refunded or credited.

(b) Credit or refund under subsection (a) shall be allowed or made only upon compliance with regulations prescribed by the Commissioner with the approval of the Secretary.

(c) In no case shall interest be allowed with respect to any amount of tax under this title credited or refunded.

(d) No overpayment of tax under this title shall be credited or refunded (otherwise than under subsection (a), in pursuance of a court decision or otherwise, unless the person who paid the tax establishes, in accordance with regulations prescribed by the Commissioner with the approval of the Secretary (1) that he has not included the tax in the price of the article with respect to which it was imposed, or collected the amount of tax from the vendee, or (2) that he has repaid the amount of the tax to the ultimate purchaser of the article, or unless he files with the Commissioner written consent of such ultimate purchaser to the allowance of the credit or refund.

Sec. 622. Use by Manufacturer, Producer, or Importer

If—

(1) any person manufactures, produces, or imports an article (other than a tire or inner tube) and uses it (otherwise than as material in the manufacture or production of, or as a component part of, another article to be manufactured or produced by him which will be taxable under this title or sold free of tax by virtue of section 620, relating to sale of articles for further manufacture); or

(2) any person manufactures, produces, or imports a tire or inner tube and sells it on or in connection with, or with the sale of, an article taxable under section 606(a) or (b), relating to the tax on automobiles, or uses it;

he shall be liable for tax under this title in the same manner as if such article was sold by him, and the tax (if based on the price for which the article is sold) shall be computed on the price at which such or similar articles are sold, in the ordinary course of trade, by manufacturers, producers, or importers thereof, as determined by the Commissioner.

Sec. 623. Sales by Others Than Manufacturer, Producer, or Importer

In case any person acquires from the manufacturer, producer, or importer of an article, by operation of law or as a result of any transaction not taxable under this title, the right to sell such article, the sale of such article by such person shall be taxable under this title as if made by the manufacturer, producer, or importer, and such person shall be liable for the tax.

Sec. 625. Contracts Prior to May 1, 1932

(a) If (1) any person has, prior to May 1, 1932, made a bona fide contract for the sale, after the tax takes effect, of any article in respect of the sale of which a tax is imposed under this title, or in respect of which is imposed under this subsection, and (2) such contract does not permit the adding to the amount to be paid under such contract, of the whole of such tax, then (unless the contract prohibits such addition) the vendee shall, in lieu of the vendor, pay so much of the tax as is not so permitted to be added to the contract price. If the contract of the character above described was made with the United States or with any person other than a dealer, no tax shall be collected under this title.

(b) The taxes payable by the vendee shall be paid to the vendor at the time the sale is consummated, and shall be collected, returned, and paid to the United States by such vendor in the same manner as provided in section 702. In case of failure or refusal by the vendee to pay such taxes to the vendor, the vendor shall report the facts to the Commissioner, who shall cause collection of such taxes to be made from the vendee.

Sec. 626. Return and Payment of Manufacturers' Taxes

(a) Every person liable for any tax imposed by this title other than taxes on importation (except tax under section 615, relating to tax on soft drinks) shall make monthly returns under oath in duplicate and pay the taxes imposed by this title to the collector for the district in which is located his principal place of business or, if he has no principal place of business in the United States, then to the collector at Baltimore, Maryland. Such returns shall contain such information and be made at such times and in such manner as the Commissioner, with the approval of the Secretary, may by regulations prescribe.

(b) The tax shall, without assessment by the Commissioner or notice from the collector, be due and payable to the collector at the time so fixed for filing the return. If the tax is not paid when due, there shall be added as part of the tax interest at the rate of 1 per centum a month from the time when the tax became due until paid.

Sec. 627. Applicability of Administrative Provisions

All provisions of law (including penalties) applicable in respect of the taxes imposed by section 600 of the Revenue Act of 1926, shall, insofar as applicable and not inconsistent with this Act, be applicable in respect of the taxes imposed by this title.

Sec. 628. Rules and Regulations

The Commissioner, with the approval of the Secretary, shall prescribe and publish all needful rules and regulations for the enforcement of this title insofar as it relates to the taxes on articles sold by the manufacturer, producer, or importer. The Secretary shall prescribe and publish all needful rules and regulations for the enforcement of this title insofar as it relates to the taxes which under the provisions of section 601 (b) are to be levied, assessed, collected, and paid in the same manner as duties imposed by the Tariff Act of 1930.

Sec. 629. Effective Date

This title shall take effect on the fifteenth day after the date of the enactment of this Act, except that section 628, relating to rules and regulations, and this section, shall take effect on the date of the enactment of this Act. No sale or importation after June 30, 1934 (or after July 31, 1934, in the case of articles taxable under section 606, relating to the tax on automobiles, etc., or section 602, relating to the tax on tires and inner tubes, or after June 30, 1933, in the case of articles taxable under section 617, relating to the tax on gasoline), shall be taxable under this title.

WINNERS IN LEONARD CONTEST ANNOUNCED

(*Concluded from Page 1, Column 1*)

cantile Institute, Salt Lake City, D. E. Pritchett; Aeolian Co., St. Louis, H. J. Free.

Interstate Electric Co., Shreveport, La., J. A. Lee; Cronin Distributing, Inc., Portland, Ore., L. W. Jones; Spurrier's, Inc., Oklahoma City.

C. M. McClung & Co., Knoxville, Tenn., L. M. Ross; McWhorter, Weaver & Co., Nashville, Tenn., L. T. Hudson; Smith Radio Corp., Louisville, Ky., S. A. Mason.

Klein Stove Co., Philadelphia, D. M. Crawford; Howe & Co., Boston, R. S. Hart; Ballou, Johnson & Nichols Co., Providence, R. I., J. M. Tennant; E. S. & E. Co., Albany, N. Y., E. L. Haye.

Distributors Report Buying Wave

(*Concluded from Page 1, Column 5*)

Ferguson, sales manager of the Republic Supply Co., Norge distributor for Michigan. "We sold more than could be delivered, with sales being especially good in the more remote rural districts."

Orders taken by the Westinghouse Electric Supply Co., Detroit branch, distributor of Westinghouse electric refrigerators for the state of Michigan, were slightly more than double that of the best previous day in 1932, according to William Howlett, sales promotion manager. Biggest order of the day was a carload for a dealer in the state, he reported.

Showrooms and service departments of the Detroit Copeland branch were busy far into the night taking orders and making installations, branch heads declared. Sales were at least 130 per cent of the best previous day this year.

FRIGIDAIRE AIR CONDITIONERS USED AT G.O.P. CONVENTION

(*Concluded from Page 1, Column 4*)

William Wile and the engineers in charge of the C.B.S. convention broadcasting and to Graham MacNamee, David Lawrence, Floyd Gibbons, Edward Thorgarson, Lowell Thomas and William Hard in the N.B.C. hut.

The installations were difficult ones because of the smallness of the booths and the number of men stationed in them, according to J. C. Chambers, manager, air conditioning division, Frigaire Corp.

The heat-generating amplifying tubes, smoke from the cigars and cigarettes of the announcers and engineers and the body heat from eight to 12 persons in each booth put a terrific load on the units, he said.

McCREA WINS FIRST PLACE IN G. E. SALES CAMPAIGN

(*Concluded from Page 1, Column 3*)

front and general staff at Cleveland. General Griswold surpassed the Pendergraph army by 17 miles.

The army of President Dunning, Duluth, made great advances during the final weeks of the campaign, but was unable to catch up with the hard-fighting troops of General Sid Caswell, Detroit, who maintained the command of the Midwestern front. General A. J. Finck of the Storz army, Denver, while having made an advance of only 471 miles into the enemy's lines, retained his commission as General of the batteries of the Rocky Mountain front.

The "Double Your Quota Drive" for the last 10 days of the war campaign instilled a new spirit in all of the armies, who in this final push against the enemy, Sales Resistance, advanced more miles than during any two previous weeks of the war campaign.

The Metropolitan front under the supervision of Adjutant General Fred Harvey led all the others, with the Atlantic front capturing second honors, and the Southwestern front, third.

Notable advances against the enemy were made by the Ovalle army, Harrisburg, Pa., the Harrison army, Newark, and the Gentsch-Thompson army, Boston, all of whom advanced over 100 miles during the final week of the campaign.

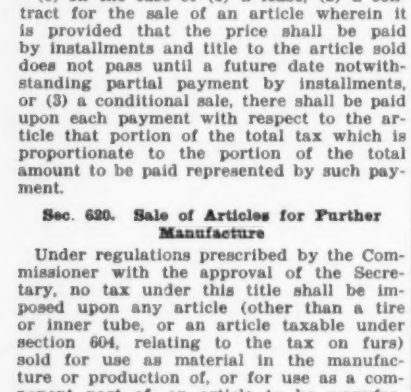
REFRIGERATION FIRM IS FORMED IN CHICAGO

CHICAGO—The Chicago Electric Refrigerator Co., a new firm to manufacture electric refrigerators and parts, has been organized here by John L. Ward and David H. Sokolow. Headquarters of the firm are at 157 N. Michigan Ave.

McCORD

Domestic

EVAPORATORS



Automatic defrosting between cycles of McCord fin tube type refrigeration cooling surface assures constant temperatures and minimum dehydration.

PRICES ON REQUEST

McCord Radiator & Mfg. Co.
DETROIT

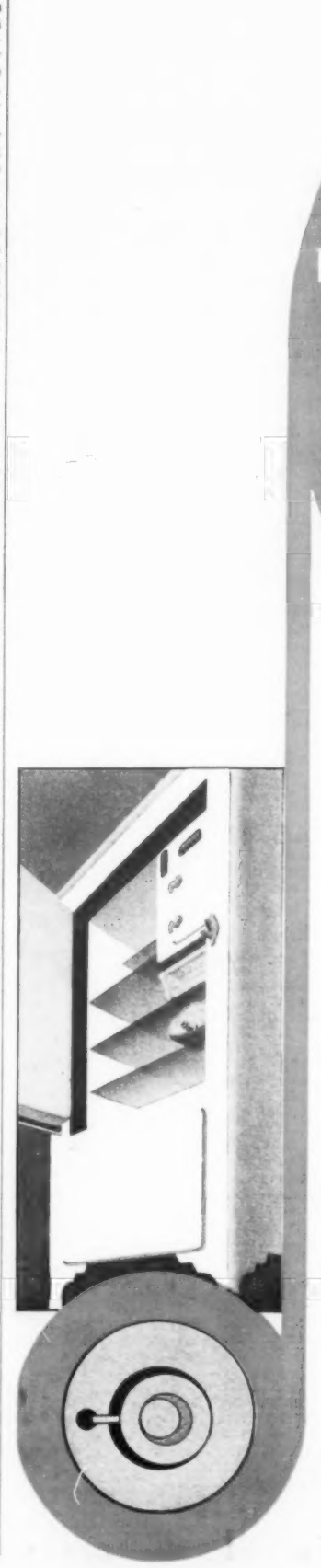
THE

EXTRA

COOLING POWER OF ROLLATOR REFRIGERATION MEANS

EXTRA PROFIT

FOR THE NORGE DEALER!



• An electric refrigerator is as good as its mechanism . . . the better the mechanism the better the refrigerator.

Norge has the Rollator, a simple, compact mechanism with a surplus of power.

• After six years of consistently growing public recognition, Norge, last year, swept into national fame with the most spectacular sales increase in the industry.

The total increase in *unit sales* for the industry was *115,000 more in 1931 than 1930. The industry's total increase in *dollar value* of sales was $15,220,000.

Of this, the Norge increase of 52,000 units in 1931 over 1930, was almost 50% of the total . . . the Norge increase of $10,000,000 in 1931 over 1930, is more than 65% of the total dollar value increase.

It was a great year for Norge dealers! And 1932 is proving even better. Public demand for the Extra Cooling Power of Rollator Refrigeration keeps on increasing. Norge dealers continue to prosper!

• Norge is today's big opportunity for the alert dealer to make profits . . . profits that stay with him.

Norge is a short line which means smaller inventory. It is service-free, is backed by responsible manufacturers and supported by a thorough-going advertising and merchandising program.

• Wise prospects see the Norge before they buy . . . progressive dealers see the Norge before they sell.

An inquiry will bring full details.

NORGE CORPORATION
658 E. Woodbridge St., Detroit, Mich.

Norge Corporation is a division of Borg-Warner Corporation, one of the world's largest makers of precision parts, including automotive free wheeling.

** Figures from Electric Refrigeration News of February 24th, 1932*

THE ROLLATOR . . . THIS SIMPLE, SERVICE-FREE MECHANISM HAS ONLY THREE MOVING PARTS . . . IS ALMOST EVERLASTING.

NORGE

Rollator refrigeration

SPECIFICATIONS ISSUE
16,500 COPIES

Merchandising Section

IN TWO PARTS
PART ONE

ELECTRIC REFRIGERATION NEWS

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INFLATED CREDIT AS PANACEA HIT BY ASSOCIATION

Credit Men Discuss New Banking Acts at Convention

By Gertrude Stanton

DETROIT—Credit problems were attacked on a broad front last week when approximately 1,000 delegates to the 37th annual convention of the National Association of Credit Men met here for a five-day session.

Unqualified opposition was registered to any form of credit inflation as proposed in various so-called economic panaceas, and an equally powerful sponsorship of "sound practices" was avowed in speeding up the movement of existing credit.

Keynote of the convention, as sounded by Henry H. Heimann, executive manager and keynote speaker of the convention, was "our job is to protect those who do from those who don't (pay their bills), and to assist those who can't."

Among the speakers at the convention sessions were Charles F. Kettering, president and general manager, General Motors Research Corp.; Hon. Wilber M. Brucker, governor of the State of Michigan; and Lloyd Garrison, special assistant to the solicitor general of the United States, who spoke on "Revision of the Bankruptcy Act."

Tuesday morning, delegates divided into 21 industrial and commercial groups for round table discussion of their respective problems. Every phase of credit work from automotive supplies to the textile industry, came up during the day. The discussions were known as "The Credit Congress of Industry,"

(Concluded on Page 4, Column 4)

SECOND KELVINATOR DERBY OPENS JULY 11

DETROIT—Thoroughbreds from all over the country will line up at the barrier July 11 for the start of the second annual Kelvinator Derby. The Derby ends Sept. 3.

The race this year is to be run in four furlongs of two weeks each, the races being called the Sayre Free-for-all, Burritt Sweepstakes, Perkins Stake Race, and Mason Classic.

Kelvinator distributors are the "horses." They will be divided up according to similar handicaps (sales quotas), and will run on 10 tracks with approximately 10 to 13 horses on each track.

Each sale will advance a horse a certain distance around the track.

At the end of the four weeks, a $15,000 Derby Purse will be divided among the different tracks on a percentage basis after total sales during the race have been totalled and tabulated.

If one track sells 15 per cent of the total sales on all tracks, that track will

(Concluded on Page 4, Column 3)

BUCKEYE SHIPS 600 UNITS FROM FACTORY IN 1 DAY

MANSFIELD, Ohio—Monday, June 20, was the biggest day in the history of Buckeye refrigerators, when more than 600 refrigerators were shipped, states Ross H. Wilson, sales manager of the refrigeration division, Domestic Industries, Inc.

Ten carloads of refrigerators have just been shipped from the factory to Wholesale Radio Equipment Co., distributor in New York City.

A new sales plan under development now, to go into effect in the near future, will involve the employment of probably 50 more men in the Buckeye sales organization, according to Mr. Wilson.

SAYRE LEAVES ON TRIP TO PACIFIC COAST

DETROIT—J. S. Sayre, sales manager of the Kelvinator Corp., has left for an extended Western trip in which he will contact Kelvinator distributors in the Rocky Mountain and Pacific Coast states.

U.S. Bureau Interprets 5% Tax

WASHINGTON, D. C.—To clear up the large number of questions which have arisen in the minds of electric refrigeration manufacturers relative to the interpretation of the new United States revenue measure, which went into effect Tuesday, June 21, a set of temporary rulings upon the provisions of the Revenue Act of 1932 applicable to mechanical refrigeration has been issued by M. E. Hoyt, chief of the sales section of the Excise Tax Division, Bureau of Internal Revenue, subject to final approval by the Commissioner of Internal Revenue and the Secretary of the Treasury.

Also, in order to disseminate information speedily concerning the new Federal excise taxes, the Treasury Department has issued a set of formal regulations appertaining thereto, as and when approved by the Secretary of the Treasury.

Mr. Hoyt's temporary rulings are printed immediately below, followed by "Regulations 46" as issued by the Treasury Department. (Advance copies of these documents have been procured by ELECTRIC REFRIGERATION NEWS through the cooperation of Merlin Wiley of Wiley, Streeter, Smith & Lord, attorneys, Detroit.)

Temporary Ruling Applicable To Mechanical Refrigeration

1. *Tax attaches* when billing is made by manufacturing company to its subsidiary sales corporation, *the basis of said tax* being the wholesale price at which sales corporation bills its distributor, which is construed to mean a fair market value. It would follow, therefore, that the manufacturer can bill and ship to the subsidiary and its branches and pass title prior to the effective date of the Act namely, June 21, 1932.

2. The proposed regulations with respect to the last sentence of Section 619 (a) were submitted to us as follows:

"Charges for transportation, delivery, insurance, installation and other charges which have no connection whatever with the manufacturing process or with placing the article in a finished condition packed and ready for shipment, are to be excluded in computing the tax. Any additional charge which a purchaser would not be required to pay if he accepted delivery of the article at the factory may be so excluded.

"These additional charges may not be excluded in computing the tax unless the amount thereof and the fact that they represent fair charges are established by adequate records to the satisfaction of the Commissioner."

3. It would follow that those manufacturing companies which sell directly to dealers, distributors, utilities and associate dealers, will be permitted to compute the tax upon the *distributor's* price, provided that the additional charges made to others than distributors are shown to be necessary to cover specific expenses applicable to that particular

(Continued on Page 2, Column 1)

KELVINATOR STARTS BURNER PRODUCTION

DETROIT—Production of Rightway oil burners by the Kelvinator Corp. will begin immediately, and shipments on orders that have been held up for some time past are coming through for delivery to dealers this week, states H. W. Burritt, vice president in charge of sales.

Since the acquisition of patents and assets of the oil burner last April, the Kelvinator Corp. has carried on engineering and laboratory tests prior to the beginning of actual production.

"Kelvinator studied the oil burner business in all its aspects for two years before deciding to enter this field of manufacture," declares Mr. Burritt.

"Numerous burners of leading makes have been tested in our fully equipped oil burner laboratories and several types have been sold through our factory branches in order to obtain field experience.

"In making improvements in Rightway burners, our engineers have had unusual opportunity to check the product. Rightway installations have been made throughout an area reaching from Bangor, Me., to Denver, Colo., and from Duluth, Minn., to Jacksonville, Fla.

"Several hundred of the burners were sold and installed through the Maise Corp. Detroit factory branch, giving our engineers access to them for checking and study under practical operating conditions near at home."

Eight Distributors Are Announced by Gibson

GREENVILLE, Mich.—Eight new Gibson distributors have been added to the list within the last three weeks, reports F. A. Delano, general sales manager of Gibson Electric Refrigerator Corp.

E. A. Higgins Co., Omaha, contacting 350 dealers in the Nebraska territory, has been appointed. Other new distributors are as follows:

Charles E. Turnock Co., 743 North Fourth St., Milwaukee, now distributing Bosch radio sets, to serve dealers in Wisconsin and upper Michigan; Laird-Nebelthau, Inc., 242 Nicollet Ave., Minneapolis, with territoy in Minnesota and the Dakotas. Robert M. Laird is president, Harry W. Nebelthau, vice-president, and J. A. Berry appliance sales manager.

Home Electric Co., Tacoma, Wash.,

(Concluded on Page 4, Column 5)

Promoted

A. M. TAYLOR
Recently appointed Leonard merchandising director.

Furniture Show To Have Six Displays Of Refrigerators

CHICAGO—Six electric refrigerator manufacturers will have exhibits in the American Furniture Mart here during the National Furniture Manufacturers show which will open Tuesday, July 5, and continue through July 16.

The companies which will have ex-

(Concluded on Page 4, Column 2)

Copeland Sales Show Increase

MT. CLEMENS, Mich.—Stimulation of the sales of electric refrigerators due to the recent summer weather was noted last week by W. D. McElhinny, vice president in charge of sales, Copeland Products, Inc.

Copeland orders received at the factory during the last week increased 144 per cent over the previous week.

WESTINGHOUSE USES 'THRIFT PLAN' DRIVE

MANSFIELD, Ohio — Westinghouse refrigerator distributors, dealers and salesmen will center their selling activities for the next two months around a "Midsummer Thrift Plan," preparations for which have recently been completed by the Westinghouse refrigeration department.

The plan is built around a number of features, which include a free gift of a water bottle to all women who visit Westinghouse showrooms, an easy payment plan starting with a $10 down payment, and thrift displays and demonstrations.

Special advertising copy and sales promotional literature has been prepared in conjunction with the sales drive, and has been placed in the hands of distributors and dealers.

The thrift demonstrations will center around prepared data on actual home surveys which will demonstrate how a Westinghouse refrigerator will pay for itself, and by showing how much money should be saved on every type of food commodity through quantity buying.

Comparative cost forms have also been prepared for canvassing salesmen, so that they can back up the thrift argument with figures taken in every individual home which they contact.

Door-hangers will be used extensively in the campaign, and will call attention to the free souvenir and to the $10 down-payment plan. A "follow-up" plan will be adhered to by salesmen in the distribution of these door-handers; they will distribute them at the close of an afternoon's work to the houses which will be canvassed the following morning.

Wurlitzer Stores To Sell Conditioners

NORTH TONAWANDA, N. Y.—Air conditioning equipment is to be sold by all Wurlitzer stores in large cities, according to a plan just outlined briefly by Farny Wurlitzer, president of the Rudolph Wurlitzer Mfg. Co. Already Cincinnati, New York City, Cleveland, and Philadelphia stores have arranged to market the equipment.

The Airco conditioner built by the Conditioned Air Corp., Detroit, and Universal Cooler refrigerating machines have been selected for sale by Wurlitzer outlets, it was announced.

A demonstrating system will be installed in each branch as it enters the field of air conditioning.

LEONARD NAMES TAYLOR HEAD OF MERCHANDISING

Vance Woodcox Chosen Kelvinator Director Of Advertising

DETROIT—Albert M. Taylor, for the last two years director of advertising of Kelvinator Sales Corp. and director of advertising and sales promotion for Leonard Refrigerator Co., will become merchandising director for Leonard Refrigerator Co., July 1, according to R. I. Petrie, sales promotion manager of Leonard Refrigerator Co.

Mr. Taylor will devote his entire time to the new position with Leonard.

Vance C. Woodcox, sales promotion manager at Kelvinator, will take over Mr. Taylor's title and duties as director of advertising, in addition to his work in sales promotion.

APRIL, MAY SALES GAIN

DETROIT—Combined Leonard shipments for the months of April and May, 1932, exceeded those for the entire 1931 fiscal year, according to R. I. Petrie, sales manager of the Leonard Refrigerator Co.

June shipments are expected to reach four times those of the same month one year ago, Mr. Petrie stated.

"This sales increase has followed the addition of some 35 distributor organizations to our list," he continued, "and 2,500 new dealers have been added."

Based on this increase, greater expenditures for advertising and sales promotion will be made during the coming year, Mr. Petrie stated.

FRIGIDAIRE DEALERS SHOW CONDITIONERS

DAYTON—Frigidaire dealers in more than 200 cities are taking part in a national demonstration of Frigidaire air conditioning equipment, Saturday June 25, through Saturday, July 2.

Operating exhibits of the new refrigerated air systems were set up in most of the cities, according to J. C. Chambers, manager, Frigidaire's air conditioning division. Many visitors were reported to be asking for surveys of their living quarters, offices and business establishments.

In the New York district, Frigidaire Sales Corp. had 21 demonstration displays, C. A. Eakin, general manager,

(Concluded on Page 4, Column 2)

WARNER OPENS CAMPAIGN FOR ADDED DISTRIBUTION

OTTAWA, Kan.—Four models, ranging in price from $99.50 to $169.50 and in size from a box of 4.2 net food storage capacity to one of 7.7 net food storage capacity, are included in the line of SureCold refrigerators manufactured and sold by the Warner Steel Products Co. of this city.

Distribution of the SureCold refrigerator will be on a direct-to-dealer-from-factory basis, according to Joseph Gershon, vice president in charge of sales. Some 20 field sales organizations of the Warner Steel Products Co. are now engaged in a drive to obtain dealer outlets, and Mr. Gershon is now on a trip in which he is holding showings of the SureCold line in hotels in St. Louis, Chicago, Kansas City, Detroit, Cleveland, Pittsburgh and Philadelphia.

The SureCold line will be displayed at the Knickerbocker hotel in Chicago during the period of the Furniture Manu-

(Concluded on Page 4, Column 1)

TYNDAL ELECTED TAYLOR FREEZER OFFICIAL

BELOIT, Wis.—John J. Tyndal has just been elected vice president of the Taylor Freezer Corp., company officials report.

Mr. Tyndal was formerly secretary of the General Refrigeration Corp., and had been with that company for the past nine years.

Specifications of 342 Models

Full specifications of 342 models manufactured by 49 refrigerator companies are given in the Engineering Section of this issue. Following is a list of the companies whose specifications are included, with the number of models of each make:

Apex, 7; Bauer Bros., 3; Bohn, 5; Commerce, 3; Copeland, 17; Crosley, 3; Dayton, 4; Devon, 2; Domestic Industries (Buckeye), 3; Frigidaire, 10; General Electric, 15; Gibson, 6; Gilfillan, 4; Gilson (Snowbird), 7; Grigsby-Grunow, 10; Grinnell, 5; Heinz & Munschauer (Niagara), 6; Illinois Moulding, 5; Jewett, 4; Kelvinator, 17; Keokuk, 9; Kulair, 3; Leonard, 9; Maine (White Mountain), 5; M & E, 4; Metal Saw & Machine (Napier), 4; Mitycold, 1; Montgomery Ward (Trukold), 7; Narragansett (Chilrite), 7; Norge, 7; North Pole, 6; O'Keefe & Merritt, 8; Parker, 8; Quality Products, 6; Republic Tool Products, 6; Rice, 6; Sanitary, 9; Sears Roebuck (Coldspot), 10; Southern California (Lincoln), 6; Starr-Freeze, 8; Stewart-Warner, 4; Tennessee Furniture (Cavalier), 11; Tricold, 6; Trupar (Mayflower), 13; Uniflow (Lectric-Ice), 12; Universal Cooler, 8; Westinghouse, 9; Williams, (Ice-O-Matic), 9; Zerozone, 5.

Bureau of Internal Revenue Issues Refrigerator Tax Interpretation

(Continued from Page 1, Column 4)

type of distribution. Mr. Hoyt indicated that any unused portion of the reserve credited through these additional charges to the utilities and dealers would be subject to tax.

4. Tax is assessed on the wholesale price regardless of whether the tax is shown separately on the invoice or included in the total billing price:

A new provision in the Revenue Act of 1932 changes the procedure under prior excise tax laws, namely, in determining the sale price upon which the tax is computed, there shall be excluded the amount of tax imposed by the Act *whether or not the tax is stated as a separate charge.* In other words, if the selling price is $100 and the tax is stated separately, the tax will be $5.00 and the total invoice $105. If the tax is not stated as a separate charge and the invoice price is $100, the tax will be 1/21st of the $100 and the selling price will be 20/21sts of the invoice price.

5. The product for export to foreign countries or for shipment to United States possessions (which include Porto Rico and the Philippines), is exempt from tax, but shipments to *Alaska* or to the *Hawaiian Islands* are taxable inas much as they are part of the United States and not a possession.

6. Refrigerator parts or units, *designed primarily and commonly used* for commercial purposes, are exempt from tax. These include ice cream cabinets and ice cream cabinet units, water coolers, lens chillers, and refrigerating units for commercial transportation equipment.

7. In connection with the interpretation of the tax to be applied to refrigerator parts and accessories, it seems desirable to divide the same into three groups, i.e.,

(1) Household and interchangeable parts.
(2) Commercial parts.
(3) Standard purchase parts.

Pending a final ruling on all parts, the first group (1), is taxable, but the other two groups (2 and 3) are not taxable.

8. It is recommended that each manufacturer take his parts price list and note thereon a black check mark against items No. 1; a red check mark against items No. 2; and a green check mark against items No. 3. Having done this, the several manufacturers will meet with Mr. Hoyt and secure a final ruling on the particular parts.

9. Under 608 (b) of the law, refrigerator gas, oil, coiled copper tubing and similar items are exempt from tax, as this is standard merchandise used in many industries. Copper tubing shaped for use is taxable.

10. When goods are shipped by bill of lading, consigned to either the *seller* or to the *buyer*, where the bill of lading with draft attached is sent to the bank for collection and where the date of shipment is prior to June 21 and draft remains unpaid on June 21, the goods are subject to tax.

11. In the foregoing cases of shipment by bill of lading, if the bill of lading is, prior to June 21, endorsed and discounted with a bank, acceptance company, or discount company, title has passed to the *transferee* and the shipment is not subject to tax.

12. Any merchandise returned must be identified as having had tax paid upon it before any tax refund or tax credit can be secured. In other words, each article on which a tax credit or refund is desired must be specifically identified.

13. Where a dealer or distributor sends in an old type of any particular part in exchange for a new type, and the manufacturer makes an exchange charge which charge is less than the cost of the new part, *the tax will attach upon such exchange charge,* it being assumed that the difference between the exchange charge and the price of the new part represents the credit which the manufacturer allows upon the old part.

14. In determining the fair market price upon which to base the tax on *retail sales* of those manufacturers not having a sales subsidiary, the manufacturers' *average billing of sales at wholesale* will be used as a basis for determining the tax.

15. In billing to a distributor or dealer, a manufacturer often adds a specific charge for advertising and service guarantee. The ruling was informally given that such additional charges could be excluded from the selling price upon which the tax is computed, if it can be established that the services furnished for such specific charges equal or exceed the amount collected from the customer. If they are less than the amount collected, a tax must be paid upon the difference. In any event, it is recommended that such items be shown separately on the invoices. Mr. Hoyt rules that all national advertising is an expense of the manufacturer and must be borne by him and not made chargeable against the customer's advertising reserve. Charges to customers for advertising should cover only local advertising.

"Regulations 46" relating to excise taxes on sales by the manufacturer under sections 602 to 611, inclusive, 613, and 614 of the Revenue Act of 1932, to be used in conjunction with the pamphlet copy of the law (see pp. 1 and 16 of Electric Refrigeration News for June 22, 1932, for provision of the law which applies to mechanical refrigerators). Chapters II, III, IV, V, VI, IX, X, XI, XII, and XIII which apply to tires and inner tubes, toilet preparations, furs, jewelry, automobiles, sporting goods, firearms, shells and cartridges, cameras, candy, and chewing gum are omitted below. Chapter VII, pertaining to radio receiving sets and phonograph records, is included.

SCOPE OF REGULATIONS

These regulations deal with excise taxes imposed under Title IV of the Revenue Act of 1932 on sales by the manufacturer, producer, or importer of—

(a) Tires and inner tubes.
(b) Toilet preparations.
(c) Furs.
(d) Jewelry, etc.
(e) Automobiles, motor cycles, etc.
(f) Radio receiving sets and phonograph records.
(g) Mechanical refrigerators.
(h) Sporting goods.
(i) Firearms, shells, and cartridges.
(j) Cameras.
(k) Candy.
(l) Chewing gum.

The tax on the sales of the 12 classes of articles will be considered hereinafter in the order named. The regulations with respect to the determination of tax liability and the computation of the tax and the manner of its application are set forth in Chapters I to XIII, inclusive. The regulations relating to the collection and return of tax and the imposition of penalties and other matters are embodied in Chapter XIV. The sections of law referred to in these regulations are sections of the Revenue Act of 1932, unless otherwise stated.

CHAPTER I
GENERAL PROVISIONS
EFFECTIVE PERIOD

(Under Section 629 of the Revenue Act of 1932.)

Article 1. **Effective period.**—The tax imposed under Title IV of the Revenue Act of 1932, is on articles sold, leased, or used by the manufacturer, producer, or importer on or after June 21, 1932, even though manufactured, produced, or imported before that date.

No such sale, lease, or use after June 30, 1934 (or after July 31, 1934, in the case of articles taxable under sections 602 and 606, relating to the tax on tires and inner tubes and automobiles, etc.), is taxable under the title.

DEFINITIONS

(Under Section 1111 (a) (1), (2), (3), (10), (11), (12), (13) and (14), and (b) and Section 618.)

Article 2. **Definitions and use of terms.**—As used in these regulations, unless obviously inapplicable, the term "manufacturer" is used to include "producer" and "importer"; the term "sold" to include "leased"; the term "sale" to include "lease"; the term "purchaser" to include "lessee"; and the term "vendor" to include "lessor"; and the other terms used in these regulations have the meaning assigned to them by section 1111.

LIABILITY FOR TAX

(Under Section 625 of the Revenue Act of 1932, as Amended by the Joint Resolution Approved June 13, 1932.)

Article 3. **Liability of manufacturer for tax.**—The tax covered by these regulations shall be paid by the manufacturer, producer, or importer on all sales, whether made directly or through an agent, except as provided in article 6.

With respect to contracts made prior to May 1, 1932, section 625 provides that if the contract does not permit the addition of the tax to the price and does not provide that the vendor shall pay the tax, the tax shall be paid by the vendee to the vendor at the time of sale and shall be returned and paid to the collector by the vendor. (See article 67.)

No tax attaches where such a contract has been made with the United States, or where under such a contract delivery has been made prior to June 21, 1932, to any person other than a dealer or other than a person intending to use the article as material in the manufacture or production of another article, or to sell it on or in connection with, or with the sale of, another article.

Article 4. **Who is a manufacturer or producer.**—As used in the Act, the term "producer" includes a person who produces a taxable article by processing, manipulating, or changing the form of an article, or produces a taxable article by combining or assembling two or more articles.

Under certain circumstances, as where a person manufactures or produces a taxable article for a person who furnishes materials and retains title thereto, the person for whom the taxable article is manufactured or produced, and not the person who actually manufactures or produces it, will be considered the manufacturer.

A manufacturer who sells a taxable article in a knockdown condition, but complete as to all component parts, shall be liable for the tax under Title IV and not the person who buys and assembles a taxable article from such component parts.

Article 5. **When tax attaches.**—In general the tax attaches when the title to the article sold passes from the manufacturer to a purchaser.

When title passes is dependent upon the intention of the parties as gathered from the contract of sale and the attendant circumstances. In the absence of expressed intention, the legal rules of presumption followed in the judisdiction where the sale is made govern in determining when title passes. Generally, title passes upon delivery of the articles to the purchaser or to a carrier for the purchaser.

In the case of a sale on credit, it is immaterial whether or not the purchase price is actually collected.

Where a manufacturer consigns articles to a dealer, retaining ownership in them until they are disposed of by the dealer, title does not pass and the tax does not attach until the sale by such dealer. Likewise, where the relationship between a manufacturer and a dealer is that of principal and agent, title passes upon sale by the dealer, and tax thereupon attaches.

SALES BY OTHERS THAN MANUFACTURER, PRODUCER, OR IMPORTER

(Under Section 623 of the Revenue Act of 1932.)

Article 6. **Sales of taxable articles by persons other than the manufacturer thereof.**—Whenever any person who has manufactured, produced, or imported any of the articles covered by these regulations dies and his wife or child, or executors or administrators, or other legal representatives carry on or close out the business, the wife or child, or executors or administrators, or other legal representatives of the deceased taxpayer, shall be liable for the tax on all such articles sold by them.

A receiver or trustee in bankruptcy of a manufacturer of taxable articles who conducts or liquidates a business under a court order is liable for tax on all such articles sold by him regardless of whether the articles were manufactured before or after he took charge of the business.

An assignee for the benefit of creditors of a manufacturer of taxable articles will be liable for tax with respect to all such articles sold by him.

When one or more members of a firm or partnership withdraw, and the manufacturing business is continued by the remaining partners, or where new partners are taken into a firm, the new firm so constituted will be liable for tax on all taxable articles sold by it regardless of when they were manufactured.

A corporation which results from a statutory consolidation, or a stockholder in a corporation who after its dissolution continues the business, is liable for tax on all taxable articles sold irrespective of whether such articles were manufactured by the old corporation or by the new corporation or by such stockholder.

On articles manufactured for a jobber by a foreign manufacturer the jobber must pay tax on his sales as the importer of such articles.

SALE OF ARTICLES FOR FURTHER MANUFACTURE

(Under Section 620 of the Revenue Act of 1932.)

Article 7. **Sales for further manufacture.**—Section 620 provides that except in the case of tires and inner tubes and articles taxable under section 604, relating to the tax on furs, no tax will be imposed upon articles sold for use in the manufacture or production of other articles subject to tax under Title IV. The right to exemption shall be established by a certificate of exemption such as is set forth below.

The exemption is provided in the case of an article, otherwise subject to tax, which is sold (1) for use as material in the manufacture or production of a taxable article, or (2) for use as a component part of a taxable article to be manufactured or produced by the vendee. In order to obtain the exemption from tax, the vendor must obtain from the purchaser, and retain in his possession, a certificate of the purchaser, showing conclusively that the purchaser is a manufacturer of taxable articles and that the article so purchased is to be used by the purchaser for one of the two purposes specified.

If the vendee resells an article sold to him tax free under section 620 he shall, for the purposes of Title IV, be considered the manufacturer and will either be required to pay the tax imposed thereon or will have to establish by exemption certificate that his sale is tax free under the terms of section 620.

When material or component parts are sold on or in connection with the taxable sale of articles enumerated under Title IV, the manufacturer of the articles will pay the tax on the full selling price of such articles, including materials or component parts purchased free of tax.

Jobbers or dealers who are not manufacturers, and users who are not manufacturing taxable articles, are not entitled to purchase tax free under certificate.

Under the specific provisions of section 620, tires and inner tubes, and articles taxable under section 604, relating to the tax on furs, are not permitted to be sold tax free as material for use in the manufacture or production of, or as a component part of, another article taxable under the Title IV. (See articles 26 and 40.)

Following is a form of the certificate of exemption which will be accepted and in substance must be strictly adhered to:

EXEMPTION CERTIFICATE

The undersigned hereby certifies that he is a manufacturer or producer of one or more articles taxable under Title IV of the Revenue Act of 1932 and that the article or articles specified in the accompanying order are purchased by him for use as material in the manufacture or production of, or for use as component parts of, an article or articles to be manufactured or produced by him which will be taxable under such title or sold by him under a similar exemption certificate.

The undersigned understands that under section 620 of the Revenue Act of 1932 he becomes for the purposes of that Act the manufacturer or producer of the article or articles so purchased, and must file returns and pay tax in the event he resells them (except under a similar exemption certificate) or uses them otherwise than as above specified.

If it is impracticable to furnish a separate certificate for each order, a certificate covering all orders between given dates (such period not to exceed a month) will be accepted.

In the case of orders placed prior to June 21, 1932, for articles to be sold after that date, exemption certificates may be obtained at any time prior to the due date of the return of the vendor.

If in any case such a certificate, with supporting invoices, can not be produced on demand of any internal-revenue officer, tax shall be payable by the manufacturer upon all articles sold tax free by him as to which such orders and certificates are not produced.

BASIS OF TAX (SALE PRICE)

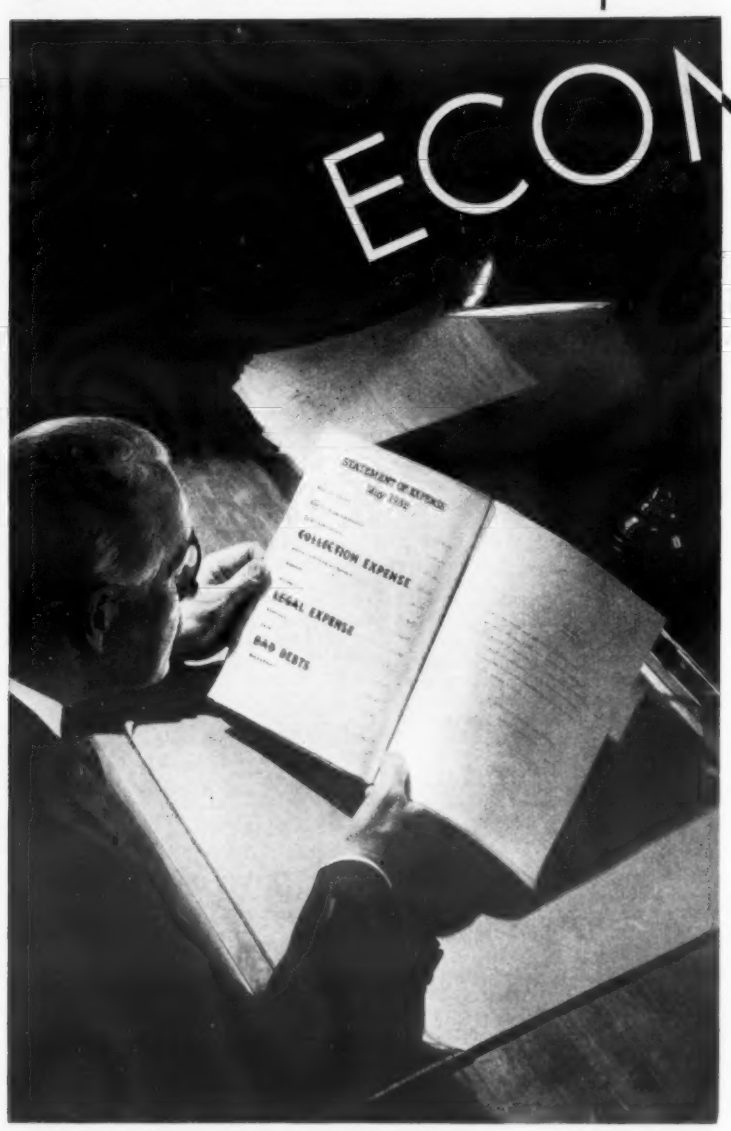
(Under Section 619 (a) and (c) of the Revenue Act of 1932.)

Article 8. **Basis of tax on sales generally.**—The tax is imposed on each sale by the manufacturer of the articles enumerated in these regulations. The provisions of the Act quoted embody the rules for determining the sale price, which is the basis of the tax. In general, this should be the manufacturer's actual price at the factory or place of production. In determining the sale price, for tax purposes, there shall be included any charge incident to placing the article in condition packed ready for shipment. There shall be excluded (1) the amount of tax imposed by Title IV, whether or not billed as a separate item, and (2) (subject to the provisions of article 12) transportation, delivery, insurance, installation, or other charges (not required by the preceding sentence to be included).

Where articles are sold on credit, the tax

(Continued on Page 10, Column 1)

When the Spotlight is on ECONOMY



C. I. T. Refrigerator Financing Service is the most economical method of handling your time payment sales because *it gets results.* Our credit checking and our collection services attain a high degree of efficiency for the reason that they are carried through on the ground by our own well-trained men in our local offices.

Wherever you are there is a C. I. T. Office near you. It is ready to serve you as if it were your own office, in the handling of all instalment detail. Don't compare C. I. T. with the ordinary "long range" type of finance service.

In these times more than ever the refrigerator merchant needs C. I. T.'s daily cooperation so that credit will be given to the right people, collections will be followed through properly, and costly mistakes avoided.

C. I. T. Plans cover all models of approved type of mechanical refrigerators and water-coolers, as well as electric ranges and electric water-heaters. A large percentage of the country's most successful dealers use C. I. T. Service. Ask a C. I. T. field-man to tell you what some of them have written about the part C. I. T. has had in making their credit business truly profitable.

These C. I. T. Local Offices Will Welcome Your Inquiry

Aberdeen – Akron – Albany – Altoona – Amarillo – Asbury Park
Asheville – Atlanta – Augusta – Austin – Baltimore – Bay Shore
Beaumont – Beckley – Binghamton – Birmingham – Bluefield – Boston
Bridgeport – Bronx – Brooklyn – Buffalo – Camden – Charleston
Charlotte – Chicago – Cincinnati – Clarksburg – Cleveland – Columbia
Columbus – Dallas – Davenport – Dayton – Denver – Des Moines
Detroit – El Paso – Erie – Florence – Fort Wayne – Fort Worth
Fresno – Glens Falls – Green Bay – Greensboro – Greenville
Hagerstown – Harrisburg – Hartford – Hempstead – Hickory – Houston
Huntington – Indianapolis – Jackson – Jacksonville – Jamaica
Jamestown – Jersey City – Johnson City – Kansas City – Kenosha
Knoxville – Lansing – Lexington – Lincoln – Little Rock – Los Angeles
Louisville – Manchester – Memphis – Miami – Milwaukee – Minneapolis
Montgomery – Montpelier – Mt. Vernon – Nashville – Newark – New Haven – New Orleans – New York – Norfolk – Oklahoma City – Omaha
Orlando – Owensboro – Paterson – Peoria – Perth Amboy – Philadelphia
Pittsburgh – Portland, Me. – Portland, Ore. – Poughkeepsie
Providence – Raleigh – Reading – Reno – Richmond – Roanoke – Rochester
Sacramento – St. George – St. Louis – Salt Lake City – San Antonio
San Diego – San Francisco – San Jose – Scranton – Seattle – South Bend
Spokane – Springfield – Spring Valley – Stockton – Syracuse
Tampa – Toledo – Tucson – Tulsa – Utica – Washington – Watertown
Wheeling – White Plains – Wichita – Wilkes-Barre – Youngstown.

C.I.T. CORPORATION
ONE PARK AVENUE, NEW YORK
A Unit of
COMMERCIAL INVESTMENT TRUST CORPORATION
CAPITAL AND SURPLUS OVER $80,000,000

Subsidiary Operating Companies with Head Offices in New York – Chicago
San Francisco – Toronto, Canada – Also Completely Functioning Local Finance Offices in the Principal Cities

ONE OUT OF EVERY THREE DOMESTIC ELECTRIC REFRIGERATORS IN USE IS A GENERAL ELECTRIC

Where Competition is keenest

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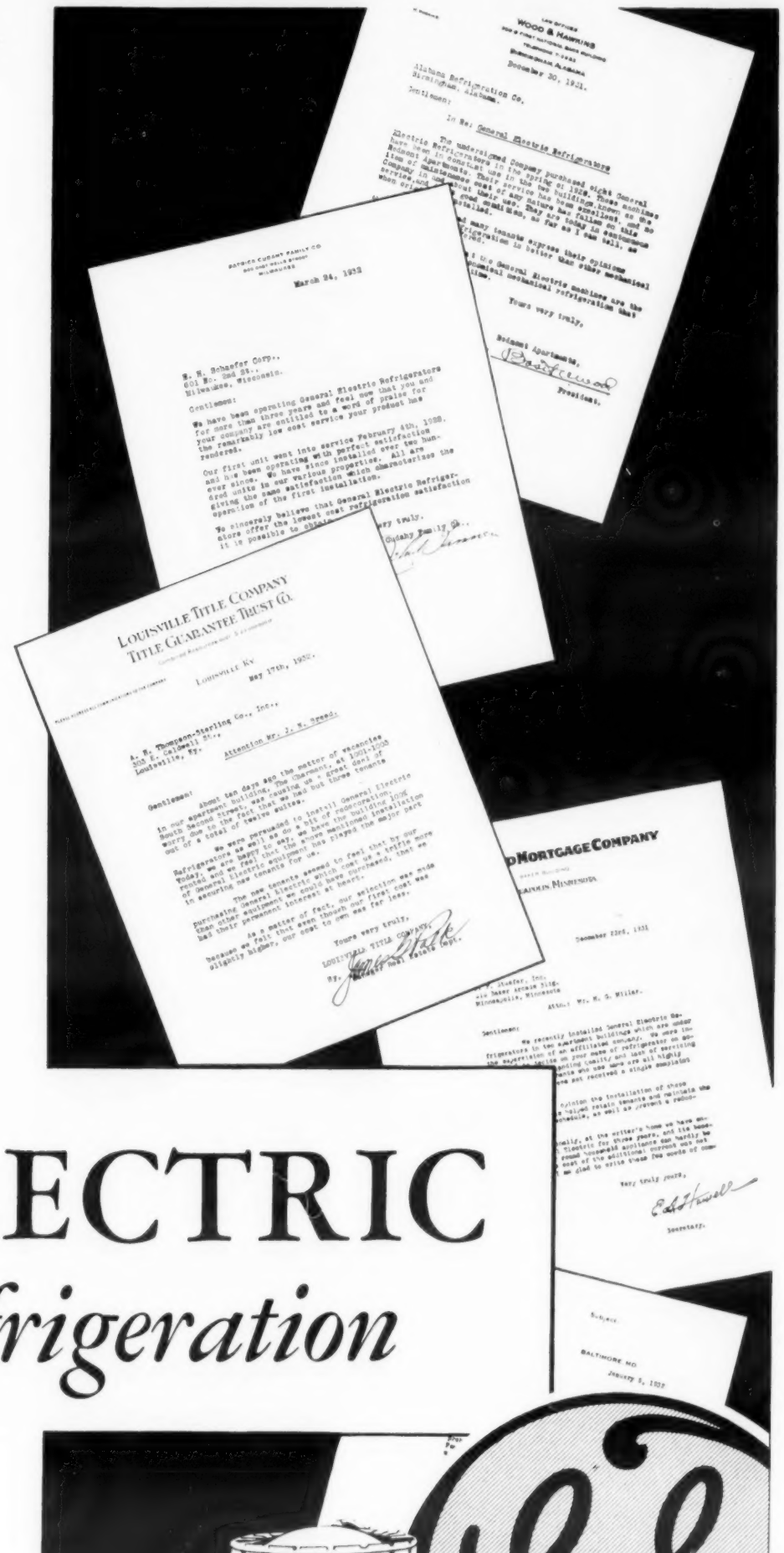
Hard-headed and tight-fisted apartment house owners choose

GENERAL ELECTRIC

for Lowest Cost Refrigeration



REFRIGERATION is a matter of dollars and cents to the apartment house operator. He *knows* costs. To him, first cost, maintenance and depreciation determine the value of refrigerating equipment. Apartment house operators controlling tens of thousands of suites have written us that "General Electrics provide the lowest cost refrigeration service it is possible to buy". A few of their letters are reproduced here.

General Electric retailers know that the same arguments that sell General Electric Refrigerators to the apartment house owner make buyers out of domestic prospects. The unfailing dependability of the famous Monitor Top mechanism is the customer's definite assurance of long life and expense-free service. To the retailer, this dependability means an absence of service necessity. Costly servicing departments are not necessary to the General Electric retailer's organization. His profits from the sale of a refrigerator are his to *keep*.

General Electric's story of *lowest cost refrigeration* . . backed by facts and figures . . is the most powerful sales argument in the refrigeration industry today. *Performance* is selling General Electric Refrigerators . . *performance* is keeping them sold . . and *performance* is making it possible for General Electric retailers everywhere to realize a greater *net* profit on a smaller investment of capital. + +General Electric Company, Electric Refrigeration Department, Section DF 63, Hanna Building, Cleveland, Ohio.

Millions have joined the ever-widening G-E Circle, presided over by Grace Ellis, N.B.C. Coast to Coast network, every week day at noon (except Saturday); (Eastern Daylight Saving Time).

GENERAL ELECTRIC

ALL-STEEL REFRIGERATOR

DOMESTIC, APARTMENT HOUSE *and* COMMERCIAL REFRIGERATORS—ELECTRIC WATER COOLERS

WARNER OPENS DRIVE FOR MORE DEALERS

(Concluded from Page 1, Column 5)

facturers' show starting next week. Mr. Gershon is also planning to exhibit the new SureCold water cooler which will list at $125 at the Chicago exhibit.

The SureCold unit, which is assembled on a 9x14 in. base, is of the "drop in" type and may be placed in any cabinet built to hold the unit in the top. The unit will be sold separately to any dealer who wishes to assemble his own job, or who desires a particular make of cabinet, Gershon stated. Gershon is showing the cabinets of a number of cabinet manufacturers in the display which he is holding in various hotels throughout the country.

The SureCold unit features a two-cylinder compressor direct connected to a 1/5 hp. Century motor. The unit has only three moving parts. It has forced oil circulation. Timken bearings are used.

Sulphur dioxide is the refrigerant used, the quantity being 1½ lbs.

Expansion coils encircle the sleeves, making for fast freezing of ice cubes. The mountaing is of the "floating power" type, the unit being set on a soft rubber foundation.

All models have automatic 8-point temperature control, with motor overload protection. The condenser is cooled by a fan.

Exterior finish is white lacquer on copper-bearing steel. All models have porcelain liners. Hardware is chromium-plated. All models have broom-high legs.

The $99.50 model with a net food storage capacity of 4.2 cu. ft. will make 42 ice cubes at one freezing in two ice cube trays. The $119.50 model with a net food storage capacity of 5.2 cu. ft. will make 63 ice cubes in three ice cube trays at one freezing.

The $149.50 model with a net food storage capacity of 6.2 cu. ft. will make 84 ice cubes in four trays at one freezing. The model at $169.50 with a net food storage capacity of 7.7 will make 105 ice cubes in five ice cube trays at one freezing.

Frigidaire Dealers Hold Air Conditioning Shows

(Concluded from Page 1, Column 5)

reported to the factory. Many of these consisted of actual installations for the permanent conditioning of the showrooms.

W. O. Waldsmith, president, Del-Home Light Co., St. Louis, eastern Missouri and southern Illinois distributor for Frigidaire, air conditioned his entire headquarters building, and in addition installed an exhibit in the showrooms of the Union Electric Light & Power Co.'s main office building.

Virtually all of the display rooms in which the conditioning units were shown had special signs outside drawing the attention of passersby to the fact cool comfort was available within despite the hot, sticky atmosphere of the outdoors.

Newspaper advertising copy using hot weather as the theme served to attract many visitors.

FURNITURE SHOW TO OPEN IN CHICAGO

(Concluded from Page 1, Column 3)

hibits at the Furniture Mart and the room numbers of the exhibits are as follows:

Gibson Refrigerator Co., 1446; Tennessee Furniture Corp., 501; Sanitary Refrigerator Co., 1430; Freeze King Refrigerator Corp., 322; Illinois Moulding Co., 713; Abernathy Furniture Co., 441.

The Warner Steel Products Co., manufacturer of the SureCold line of electric refrigerators, will maintain an exhibit in the Knickerbocker hotel.

SECOND KELVINATOR DERBY OPENS JULY 11

(Concluded from Page 1, Column 1)

receive 15 per cent of the total purse. As in any horse race, there are three winners on each track—win, place, and show. The track purse will be divided thus: 50 per cent to the winner; 30 per cent to second; and 20 per cent to third.

Tickets will be given each salesman for every sale he makes during the race. These tickets may be cashed according to their value as determined by the number of tickets held on each winning horse in proportion to the amount of the purse won.

Tickets will be issued as follows: sale of a model K4, K5, K6, or K7, one ticket; model PK4, PK5, S4 and S5, two tickets; model PK6, PK7, S7 and S9, three tickets; model D6, four tickets; model D8, five tickets; model D11, six tickets; model D14, seven tickets; model D22, eight tickets.

One ticket will be given for each $300 or nearest portion thereof in an apartment house sale; and one ticket will be given for each $200 or nearest portion thereof in a commercial sale.

Besides the Derby Purse, $4,000 will be awarded in special furlong prizes.

Prizes worth $1,000 will be awarded to the best "racing stewards," during the Derby period. Each distributor is to appoint a "steward," who will act as contest secretary in that territory, promoting the race among dealers and salesmen, handling reports, bulletins, correspondence, etc.

Prize awards of $3,000 in merchandise will be distributed to retail sales managers and wholesale men whose horses (distributors) finish in the money.

Special bonus tickets will be issued to sales managers and wholesale men for sales reported by all salesmen or dealers under their jurisdiction.

Credit Men Attack Inflation as Remedy For Business Conditions

(Concluded from Page 1, Column 1)

and comprised the second such feature held in as many years at the credit men's convention.

Leader of the electrical and radio group was Frank H. Young of the General Electric Supply Corp., Chicago; of furniture group, Mayo Zeigler of the John Widdicomb Co., Grand Rapids, Mich.; for the hardware group, G. C. Klippel, Van Camp Hardware & Iron Co., Indianapolis.

The group conferences followed a morning general session at which Shirley E. Hass, secretary-manager of the Retail Grocers' Association, Louisville, Ky., spoke on "The New Competition."

Mr. Hass based his remarks on the credit experiences of his association, which show the need, he declared, of a further extension of group credit activities to include the smallest retailer and shop man.

He showed the mortality rate of the so-called small operators, and classified the risk of doing business under present credit-determining facilities. He declared that a retail grocer doing an annual volume of $25,000 is a sound risk from the wholesaler's point of view.

The speaker cited a case in which a retailer doing a gross business of $7.20 a day was shown to be costing the wholesaler $7.50 a day to contact.

Kettering Expresses Confidence

Mr. Kettering, in his speech Wednesday morning, expressed confidence in the business structure of the country.

"We have set up a marvelous industrial and commercial machinery," he said. "When machinery fails to function properly the fundamental thing to do is to find out what is wrong. How slow does the machine have to run before we can fix it? Is it still going too fast to be fixed?

"A change of mind is needed first," he continued. "It is hard to secure because we are actuated by instinct as well as intelligence. Instinct under fear makes us prone to do individual things rather than act as a group.

"Years ago we recognized that business is a flow of useful goods. Credit and money are the counterflow. There developed during the past few years an abnormal flow. This was wrong.

"True wealth consists of the development of useful materials. Today, materials and useful goods are held valueless, and an abnormal value has been placed upon money."

Sharing the program with Mr. Kettering Wednesday morning were Gov. Brucker of Michigan and Lloyd K. Garrison, special assistant to the solicitor general of the United States.

Brucker Welcomes Delegates

Gov. Brucker welcomed the delegates to Michigan, and warned against "the walking delegates of demagoguery, those defeatists who wear no communistic badge of organized unrest, but persist in the expression that the world has gone to the bow-wows."

Mr. Garrison outlined proposed bankruptcy legislation due for enactment at the next session of Congress.

"Present bankruptcy laws are cumbersome and expensive," he said. "They are of little use to the average merchant. The temptation of the merchant in financial difficulties is to hang on and on, because of fear of disgrace. The purpose of the bankruptcy bill is to enable the merchant to solve his difficulties with the aid of his creditors.

"Under the proposed legislation, the insolvent merchant can make an agreement with his creditors for time extension. If two-thirds agree, the settlement is legally binding on all creditors.

"Under present laws the honest merchant has no recourse. He can either file a bankruptcy petition or make assignments of his assets. Even then, any three creditors can force him into involuntary bankruptcy.

Assignment Agreement Binding

"The new law would make an assignment agreement binding and would make impossible involuntary bankruptcy at the will of a few minority creditors.

"If the assignees find that the business picks up, it would be possible to save the business which otherwise would be destroyed through bankruptcy proceedings.

"Provisions of the law apply in a like manner to corporations, which may reorganize, under the act, without being adjudged bankrupt. It likewise applies to professional men and wage earners."

Mr. Garrison said that the proposed law is a direct blow to the dishonest business man who plans ahead to waste or conceal his assets and deliberately goes into bankruptcy.

The legislation would set up a staff of 10 administrators, each covering a different section of the country. They would be full-time officers to which suspicious bankruptcy cases would be reported for investigation.

"Another aim of the bill is to make trustees more powerful and more fully controllable," he continued. "It is the hope of the sponsors that a limited number of individuals or companies in each community will go into the business of bankruptcy trusteeship, thereby eliminating the present type of trustee who may be too interested or have too little interest in the affairs of he insolvent concern."

The bill, he said, has the indorsement of the American Bankers' Association, the National Association of Manufacturers, the American Federation of Labor, and many other trade and professional associations. The National Association of Credit Men added its approval Wednesday.

Circulation of Credit

The Reconstruction Finance Corp., Glass-Steagall Bill, open market operations of the Federal Reserve System, and the use of Trade Acceptances are intended and should operate to bring the proper circulation of credit, said Henry H. Heimann, executive manager, in his keynote speech.

"In trying times, much ill-advised legislation and many panaceas are attempted. The legislation proposed has sought the creation of new credit, so-called. Embodied in such measures as the Goldsborough Bill and the various large bond issues for non-productive works, it shoots wide of the mark and simply adds further burdens without contributing to the proper utilization of credit now available.

"We have credit now, and in abundance. It is the lack of circulation and velocity of credit that is holding up the ship of commerce. We have a credit unemployment problem to solve. Put sound credit to work and you will restore confidence. Create new credit, and you simply add to the storehouse of stagnant credit."

One of the serious abuses of credit in the past two years, the speaker declared, has been its misdirection into fixed and permanent investments to the impoverishment of credit needs for current operations. It is likewise significant, he said, that consumer credit, which within limitations is sound, was built up to an amount far beyond the possibility of the American citizenry to absorb.

"Most people mortgaged their entire future," he said. "After 1929, many awakened to find that they did not possess any equities, either in securities, wages or salaries, but were burdened instead with heavy obligations. Their normal consumption has been sapped in meeting past debts."

Battle Just Started

Mr. Heimann stated that although the fight for sound credit practices has been going on for 36 years, the major battle has just begun.

"Even in the present situation our past work is strongly in evidence. There has been almost a total absence of inventory inflation to the extent that existed in 1920 and 1921, testifying that the credit manager of the commercial concern exercised sound judgment as to the volume of credit extensions for his company."

The one outstanding favorable factor on the present business horizon, Mr. Heimann believes, is the fact that irrespective of how small consumption may be, it is nevertheless in excess of production. In a short time, he believes, the wheels of production must start turning.

Attractive to Banks

Commenting upon the association's sponsorship of greater use of the trade acceptance, the speaker termed it a type of paper attractive to banks, and one which enables them to pass on indirectly to business and industry the helpfulness they have received through the Reconstruction Finance Corp., and the Glass-Steagall Bill, and the open market operations of the Federal Reserve System, which have given them a measure of needed liquidity.

"Bankers have been severely criticized because they haven't passed on this liquidity to business and industry," he said. "One of the most important reasons behind the banks' reluctance to pass this credit on has been the scarcity of good commercial paper. As the bond market is not conducive to investment, except in the high grade issues, the bankers feel that to expand credit generally might result in their return to a frozen condition. The trade acceptance is considered by the bankers as a sound means of accomplishing their purpose."

The plan involves the adoption by big business of trade acceptance methods of financing purchases and sales, thereby providing a large volume of two-name eligible paper.

GIBSON APPOINTS EIGHT NEW DISTRIBUTORS

(Concluded from Page 1, Column 2)

distributor for the state of Washington: South Bend Electric Co., South Bend, Ind., with F. H. Shumaker as president and F. E. Kilander as sales manager; Dixie Utilities Co., 5 Governor St., Richmond, Va., with H. H. Cowen, manager, distributor in Virginia.

Inter-Mountain Electric Co., Salt Lake City, covering Utah, Idaho, Arizona, Wyoming; Morgan, Inc., Savannah, Ga., distributor in Georgia.

SWEEPING ENDORSEMENT REVEALED IN

Roll Call

OF REFRIGERATORS USING

FLEXIBLE RUBBER FREEZING TRAYS

These American Makes of Automatic Refrigerators are equipped with FLEXIBLE RUBBER FREEZING TRAYS

Apex, Bohn, Brunner, Cavalier, Copeland, Dayton, Faraday, Fleck Brothers, Frigidaire, Freeze King, General Electric, Iceomatic, Ilg, Jewett, Kelvinator, Leonard, Lectric-Ice, Mayflower, M & E, North Pole, Plymouth, Rice, Sanitary, Schimmel Elec., Sparton, Standard, The Super, Tricold, Universal, Welsbach, Westinghouse, White Mountain, Yukon, Zerozone

And these Foreign Makes of Automatic Refrigerators use FLEXIBLE RUBBER FREEZING TRAYS

Electrolux Sweden
Gilson Manufacturing Company, Limited
International General Electric Co., Limited
Kelvinator of Canada, Limited
Norge Corporation of Canada, Limited
Sparton of Canada, Limited
Universal Cooler Co. of Canada, Limited
Canadian Westinghouse Company, Limited

Call the roll of automatic refrigerators using Flexible Rubber Freezing Trays and you'll be impressed with the fact that the list includes practically all the leading makes. This is the most sweeping endorsement of this sensible, modern tray that could possibly be given.

And this is important to you as a refrigerator dealer. For bear in mind that *1932 is an accessory year.* And the Flexible Rubber Tray gives you an accessory of exceptional profit possibilities. Prospective customers are ready to buy . . . and *do* buy . . . a practical, convenient, economical accessory like this. It has already been bought by *more than a million users* of automatic refrigerators. And millions more are yet to be sold . . . thousands in your own territory.

Nor is that the only source of profit offered by the Flexible Rubber Freezing Tray. It helps you close new refrigerator sales . . . at the same time often giving you *extra* profit from equipping the refrigerator with *extra* rubber trays. It is ideal for making "call backs" on your present refrigerator users. It is unsurpassed for use as a "door opener" in canvassing for new prospects.

If you're already selling the Flexible Rubber Freezing Tray let us tell you more in detail how you can use it more effectively in building up your *volume*—and your *profit*. If you're not selling this modern tray, by all means give it a trial and see for yourself how you can cash in on the trend for accessories so dominant right now.

Ask the manufacturer of the refrigerator you handle, or write direct for complete information.

THE INLAND MANUFACTURING CO.
DAYTON, OHIO

Flexo Tray
Registered U. S. Patent Office — Patented and Pats. Pending

ICE CUBES—THE MODERN WAY

Choose To-day's Line–

NEVER was a market more highly competitive than to-day's. However, there is money to be made in this market by aggressive merchandising if your line is complete, your quality high and your prices right.

Kelvinator has provided its dealers with the strongest competitive line in the whole field of electric refrigeration.

Kelvinator *alone* provides *fully automatic* operation.

Kelvinator also furnishes semi-automatic types in both lacquer and all-porcelain cabinets in the lower price range.

Kelvinator, with 17 different models, has the largest and most complete line of domestic electric refrigerators, ranging from 4 to 22-cubic feet of food storage space.

Kelvinator has the largest and most complete line of commercial equipment, backed by invaluable surveys to prove to prospects the great savings effected through electric refrigeration.

Kelvinator has by far the most attractive line of water coolers and water cooling equipment ever put on the market.

Kelvinator has pioneered the milk cooling field for years and not only has the finest line of equipment for this swiftly growing market, but has worked out a system for working with milk managers to sell producers.

Thus, whatever the type of your community—urban or rural, manufacturing or mining—Kelvinator has already paved the way for profitable business for you with eighteen years of product development, with eighteen years of active sales development, with eighteen years of advertising.

We repeat, money can be made in to-day's competitive market, *with the right line.* That Kelvinator is the right line is proved by the astonishing increase in all Kelvinator sales this year—in to-day's market. Write for complete details of the Full-Profit Kelvinator Franchise. . . . KELVINATOR CORPORATION, *14245 Plymouth Road, Detroit, Michigan. Kelvinator of Canada, Limited, London, Ontario. Kelvinator Limited, London, England.*

–For To-day's Market

(567)

Kelvinator

LITTLE STORIES OF INTERESTING PEOPLE IN THE REFRIGERATION INDUSTRY

THE EXPANSION VALVE

LITTLE STORIES OF INTERESTING IDEAS IN THE REFRIGERATION INDUSTRY

By **George F. Taubeneck**

A Mystery Story Which Did Not Break

Mark Twain used to complain that the funniest stories couldn't be printed. Bret Harte, likewise, often declared that if he would write the best stories he knew, people would consider them incredible.

In similar vein, the best news stories of the day sometimes do not appear in print, if at all, until long after they have ceased to have timely news value.

For instance, the public is now consuming reams upon reams of news about the national political conventions. The *real* stories behind those conventions, the tales of hushed hotel room conferences in which all the decisions are made, probably would be highly interesting.

Astute reporters may have some knowledge of what's going on in these puppet-pulling conferences; but not possessing the actual facts or records, they can't prove what they guess or pick up via the grapevine. And, as Bret Harte observed, the stories might be hooted at if they were printed.

In this issue thousands of words of documentary source material are printed on the contentions of one side of an underground fight which has involved practically all of the major refrigeration manufacturing organizations. (See page 9, Engineering Section: "Engineers Attack Special Privileges for F-12.")

An on-the-spot report of an open meeting in which protagonists and antagonists of this new refrigerant came to verbal blows appeared in the Engineering Section of the March 23 issue of the News.

Complete details of extensive and comparative tests of F-12, conducted by this refrigerant's manufacturer and hence supposedly presenting it in a favorable light, were printed in the Dec. 30 issue of the News.

Only authentic, documented material has been printed.

For more than a year the editors of ELECTRIC REFRIGERATION NEWS have been keeping muscles tensed in anticipation of the breaking of the big story of F-12 now called "Freon"; its real name is ("dichlorodifluoromethane").

In the process of development, they heard, was a refrigerant which—at last—was safe; which would "revolutionize the industry." But it was, mind you, only in development.

At first it was just a mathematical formula on paper. Then it was a few ounces of liquid in a test tube. Finally, after the perspiration generated in trying to produce it more than equalled in quantity the amount manufactured up to that time, a process was devised whereby F-12 could be made profitably on a commercial scale.

But still there was no story—only mystery. The refrigerant's policy must be plotted next. And while the merits of various policies were being debated, the opposition formed and made ready to do battle. When it came time to execute the policy decided upon, Mr. Policy ran not only into brick walls, but into brick-throwing as well.

Inasmuch as F-12 had been kept a mystery, it was an easy target for a whispering campaign. Statements of fact about this new refrigerant were not on record. Those who were to judge could choose only between one mouth-to-ear statement as against another.

Proponents of the supposedly safe refrigerant chose to work under cover. Which made it easy for opponents to fight it the same way. Had the whole affair been brought out into the open, there might have been no fight.

MYSTERY, psychologists tell us, breeds FEAR, not confidence.

• • •

The Low-down on F-12

Early in 1926 Frigidaire's president, E. G. Biechler, told his engineering staff that he wanted an *entirely safe* refrigerant. In charge of the problem was put Dr. Thomas Midgely of the General Motors Research Laboratories, who is given the credit for developing ethyl gasoline.

Forty known refrigerants were studied carefully, and the data gathered was incorporated into a report. None satisfied the demands. So work was begun on a new group of compounds based upon methane (CH_4).

Using carbon tetrachloride as a base, Dr. Midgely and his assistants juggled chemical formulae in an attempt to arrive at an approximation of a refrigerant which would satisfy these ideal requirements:

1. Nontoxic and nonirriating.
2. Noninflammable and nonexplosive.
3. Stable under all conditions in a refrigerator.
4. Suitable boiling point and condensing pressure for the system in which it is used.
5. Noncorrosive.
6. Odorless or having pleasant odor.
7. Visible method for detecting leaks.
8. Inert with respect to lubricants.
9. Low cost.

Eventually he arrived, on paper, at the formula for dichlorodifluoromethane.

Came next the problem of making it. First an ounce was made, and labelled "F-12"—a laboratory number which has stuck with this refrigerant ever since. Then an apparatus for making 10 lbs. of it at a time was devised. One hundred machines were charged with it and tested for about three years.

General Motors executives decided that production of this promising new refrigerant should be centered at the du Pont plant at Wilmington, Del.—Kinetic Chemicals, Inc. The plant got all set to produce it in large quantities.

Twofold was the policy finally agreed upon by the jubilant General Motors officials.

Frigidaire and Kinetic Chemicals engineers were to start immediately working toward the adoption of clauses in refrigeration codes exempting F-12 from restrictions governing other refrigerants.

Second, it was to be offered to other responsible manufacturers of electric refrigerators.

The price at which other manufacturers could purchase this refrigerant, we are told, appeared to have been made high enough so that General Motors could get back within a couple of years the money it had spent developing F-12. That made the price per pound considerably more than the other manufacturers were paying for sulphur dioxide and methyl chloride.

Moreover, adoption of F-12 would make it necessary for all manufacturers to redesign their machines. Hermetically sealed compressors, in particular, could be adapted to this new refrigerant only with difficulty. The other manufacturers balked.

And when squads went out to "sell" the idea of special code privilege for F-12 to city councilmen, they found opposition. Chemists and engineers working for other manufacturers had discovered that F-12 decomposes, when in the presence of a flame, into toxic gases. They made great capital of the fact.

• • •

The Situation Today

Beginning in the autumn of 1931, practically all compressors which left the Frigidaire factory were charged with F-12. This was kept a virtual secret. The new refrigerant was highly volatile, however, and before long trouble began to develop with leaks.

F-12 compressors were in use in almost every consequential city in the United States by the end of 1931. And almost everywhere they were used leaks were reported. None of these leaks, according to Frigidaire officials, occurred in conjunction with a decomposing flame. The only trouble was lost efficiency in the compressors.

At present the production of F-12 is said to be almost at a standstill; and it is reported that, save for the new two, three, and four-hole ice cream cabinets, Frigidaire is supplying compressors charged with F-12 only on special order. It is also declared that the problem of preventing the gas from seeping out has been solved.

And today an armed truce seems to be existing between the forces of Frigidaire and those of other manufacturers opposed to the granting of special privileges to this new refrigerant.

Fremont Wilson—the man who won't tell whom he is working for—breaks out now and then with a barrage against F-12.

Not long ago E. T. Williams, consulting engineer for Servel, Inc., published a pamphlet setting forth his arguments and results of tests which would tend to confirm those arguments (this pamphlet is included as an exhibit in the long summary of the case of the opposition prepared and broadcast by Mr. Wilson, and published in this issue.)

Opposition forces say they will stand pat. Especially grim are representatives of manufacturers using methyl chloride, who remember the pounding they took in Chicago during the famous code war there in the summer of 1929, and who recall that Frigidaire men forced sulphur dioxide and methyl chloride to be classed in the same category and placed under the same restrictions in all codes.

The next moves of the F-12 proponents—if figured out—are still shrouded in secrecy.

• • •

Norge Chief Takes Day Off

Busy Major Howard Blood, Norge president, gets a brief respite from his duties via a week-end cruise. He is shown with his daughter, Lorna.

Advantages of F-12

If we disregard what happens when a flame comes into contact with it, F-12 is one of the safest, least toxic of the known refrigerants—practically ranking with air, water, and carbon dioxide in that respect.

It will not burn or explode, nor will its vapors support combustion. F-12 gas, which is considerably heavier than air, will extinguish a fire. Having only a slight odor, it is nonirritating.

F-12 is highly stable, and will not attack or combine chemically with gasket materials or lubricants. It will, however, mix with mineral oils in all proportions.

F-12 and water do not react to form a corrosive compound (F-12 is less corrosive to metals than most commonly used refrigerants), thus eliminating the possibility of "stuck up" compressors. Should there be moisture in the system, however, the F-12 will carry it along to the evaporator, where it may freeze into ice.

The boiling point of F-12 is 21.7° F. below zero, which is quite satisfactory for household refrigerators, and advantageous for low-temperature refrigeration applications. Because of its low boiling point, the use of F-12 permits compressors to operate at high back pressures—which means that the compressors may run at slow speeds and still get sufficient pumping capacity.

Compressors using F-12 operate at lower head temperatures than compressors using sulphur dioxide, because the former refrigerant has a lower specific heat ratio than the latter.

It is not necessary to use a gas mask when servicing F-12 equipment, but goggles should be worn. The boiling point of F-12 is so low that it freezes the skin instantly.

• • •

Differences in Design

The chief differences between the design of compressors using F-12 and those using sulphur dioxide lies in the displacement of the compressor, and in the float valve.

A float valve designed for use in an F-12 compressor has an oil return hole in the bottom of the suction tube, and a special stainless iron insert needle seat. A hard needle seat is necessary because more liquid is passed through it for a given amount of refrigeration than in the case of sulphur dioxide.

Reduction of compressor displacement (necessary with F-12) may be accomplished by decreasing the stroke of the compressor, decreasing the bore, or decreasing the speed. This is difficult in the case of most hermetically sealed compressors, which already have a tiny bore and small stroke. And since the hermetically sealed jobs have direct drive, it is difficult to change their speed.

• • •

The Hard Facts

In addition to the lengthy compilation of source material on F-12, this issue of the NEWS contains official interpretations of the new law taxing sales of mechanical refrigerators (taken from advance copies of the interpretive rulings) and specifications of 342 models of 49 makes of refrigerators.

Both the specifications and the interpretations are greatly in demand by the industry today. Considerable extra expense and effort was required for their publication.

• • •

Taylor Grows

On the front page of this issue is reported the news that A. M. Taylor, formerly advertising manager of Kelvinator and Leonard, has been made merchandising director of Leonard, and will devote all his time and energy to duties in connection with the Leonard line.

This move has considerable significance. First of all, it denotes the maturity of Leonard. The Leonard line was brought out by Kelvinator some two years ago in order to take advantage of the distributing outlets which had been acquired during half a century for Leonard ice boxes—outlets of the jobber type which were now demanding electric refrigerators.

Today Leonard production is said to be largely responsible for the impressive gains over last year which Kelvinator-Leonard combined production figures are showing.

And the management of Leonard affairs has assumed such proportions that a major Kelvinator official who formerly handled Leonard work with his left hand in spare moments is now asked to devote his full time to it.

Those who have been following the work of Mr. Taylor this year will not be surprised at his advancement. He has been doing sales management work almost all year.

He is an inveterate traveller, and this spring addressed Kelvinator and Leonard distributor and dealer sales meetings all over the country.

The Kelvinator Comparison Contest which he conducted last fall was ostensibly an advertising campaign. Yet Mr. Taylor used the letters it brought in as *sales fodder* when he talked to Kelvinator salesmen this spring.

Among his accomplishments as an advertising manager, Mr. Taylor might list the fact that he was the first national advertising manager in the country to use four-color printing in a newspaper advertisement.

The series of four-color ads which he started this spring in *The Chicago Tribune* have since been emulated by others; but Kelvinator was first.

• • •

Owen D. Young

By the time this issue of the NEWS reaches subscribers, the Democrats will probably have nominated a candidate for President of the United States.

As this kolyum is being written, however, there is still an undercurrent of gossip in Chicago in which the name of Owen D. Young is mentioned frequently—in spite of the fact that he has flatly declared he will not be a candidate.

It is being said that while he may not be the actual nominee, the Democratic candidate, if elected, will likely lean heavily on the wise counsel of the chairman of the board of the General Electric Co.

The last time we saw Mr. Young was in the lobby of the Traymore hotel in Atlantic City, just as the N.E.L.A. convention was about to close. Again we were impressed by the fact that here is a man who looks like the mental pictures one forms, as a history student, of the national heroes of yesteryear.

As he stood there talking informally to a mixed group, he seemed as if he had walked out of John Trumbull's immortal painting of the Signing of the Declaration of Independence.

He has the majesty and stateliness and unassailable dignity which must have marked Benjamin Franklin, George Washington, Thomas Jefferson, and Alexander Hamilton.

Most of the Congressmen and high public officials the Valve has seen have simply been magnified Ward Bosses from Your Home Town, or funnysheet caricatures of The Politician.

Mr. Young, in contrast, has the appearance of The Statesman.

Perhaps there are some who will think we have overstated the case in the above paragraphs. Ida M. Tarbell, who once swung literary rights and lefts into the heavy paunch of the Standard Oil Co., has just published a biography of Mr. Young which many reviewers are criticizing on the grounds that it pictures a too-perfect man.

Lest it be said that we are merely following her cue, we hasten to point out that we know only how Mr. Young looks. And that of all the great and famous men we have seen, he alone seems to belong to the little group of men who have been—and look the part—national heroes.

• • •

Soothing Words

R. Marshall, who sells flowers and plants and bulbs and seedlings and such things at 2253 North La Salle Gardens, Detroit, prepared the following piece for the cover of an iris catalog. Read it and feel refreshed:

"Forget the Depression—plant a garden. Plant an estate or a bed in the backyard—some private area where you can retreat from the onslaughts of outrageous fortune.

"Your bonds may have soured. Dividends may have become rare. Maybe your pay has been cut or your job abolished. Most of us feel that we've been betrayed. Our castles in the air have been dissipated by raging deflationary winds. Our paper profits have vanished. What appeared to be safety 36 months ago looks like the flimsiest kind of insecurity today. The whole business seems unreal.

"But in the garden will be found a cheerful peace. Nature in 1932 is much like Nature was in 1929. She's a generous, tender, soothing, mothering comforter. In the garden the tulips bloom just as surely. The peony is not trying to remain liquid—it declares a generous dividend of beauty. Rose garden coupons are as good today as they were in former years, good for armfuls of bloom. The delphinium still pays interest.

"Here is an integrity not found in business. Every garden institution is solvent. And here is work for which wages have not been cut. Whether you go at it on your knees with your hands in the dirt or try the vicarious thing of doing the brain work under a lawn umbrella while some peasant person mangles the stubborn glebe at your direction, the reward is sure.

"So plant a garden. Plant a garden and let your brain clear. Let the evening perfume of a rose arbor calm your nerves and bring peace to your soul.

Not The Most Expensive---Nor The Cheapest---But The Greatest Value

CABINETS BY

Seeger

SAINT PAUL

Inspection

1258 operations in the building of a Seeger cabinet. 209 inspections of parts---in addition to that there are 12 inspection stations for the completed cabinet.

What Does It All Mean?

Satisfaction---without that cost of reselling because of complaint.

▼ ▼ ▼

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Ready-Made Personnel

ONE of the biggest problems of electric refrigeration sales organizations, large and small, has been personnel turn-over.

Sales managers for manufacturers have been worrying for several years about the high rate of turn-over in their dealer organizations. Some manufacturers have found that in a given year's time more than 50 per cent of the dealers with which they started the year have passed out or been shunted out before the end of 12 months (replacements, of course, have been made). These dealers ran into service troubles, had difficulty financing time payments, were dissatisfied with discounts, or failed in the eyes of district managers to do a good job.

Distributors and dealers have had the same experience with salesmen. Promising men join their crews, receive their training, make a few easy sales to friends and relatives, bump into competition and knotty objections, and drift off to "something new." Other salesmen can't tide themselves over the winter months. And at the opening of each major sales season many a retail sales manager finds it necessary to begin at the beginning again in his sales school.

Hire and Fire

In manufacturing organizations men are being hired and fired steadily. Under the terrific pressure of competition in this fighting electric refrigeration industry, chief executives are demanding results, and demanding them quickly. Or, perhaps an entire sales program, or procedure, is altered; and it seems necessary to hire a new crew of junior executives who know how to drive through this different type of sales strategy. Chief executives in this industry work something like coaches of football teams in big schools—they have a large number of players available, and substitute and shift them about frequently to match rapidly changing situations.

The net result of continual changing of personnel throughout the industry is that a great many men are being trained for positions in the refrigeration business. All of which makes it easy for the new manufacturer who enters the picture.

Persuade New Companies

As a matter of fact, one of the reasons why so many new manufacturers have begun to market electric refrigerators this year is that they have been sold on the idea by men who have formerly been connected with some of the older concerns in the industry.

For instance: Suppose a sales manager has done a good job with a refrigeration manufacturer. But the company grew rapidly, and the job grew; and it seemed to those in high seats that a more high-powered executive was needed to steer their rapidly expanding sales organization. The first sales manager is let out. He still knows how to push sales for a small-scale manufacturing operation, and he is made-to-order for a company just entering the business. A good salesman, he sells the idea and himself to a manufacturer who is wondering what to do with his time and his factory.

Or, an economy edict from a board of directors may make it seem necessary to cut some developmental engineers—men who aren't contributing directly to the business of the day—off the payroll. These engineers have been paid salaries to develop new ideas and improvements in manufacturing refrigerating machines. When they leave, they carry their ideas with them. And some non-refrigeration manufacturer with an idle plant can hire two or three of these engineers and take advantage of all they have learned and worked out *while on somebody else's payroll.*

Distributors Available

Running down the line, the new manufacturer finds it surprisingly easy to gather up distributing outlets. In one city may be a distributor who has been replaced by a factory branch. In another may reside a jobber who "fell out" with his manufacturer over the matter of "dat old davil, Quota," or over discounts. A third city may present two or three distributing organizations which have at one time or another sold electric refrigerators, and know in advance some of the problems they are going to meet, and what should be done about preparing for them.

By the same token, it is not particularly difficult for outlets selling a new make of electric refrigerator to locate dealers and salesmen who have had electric refrigeration training. Not only can they secure retail distribution through dealers who have been deemed too slow for the requirements of the larger manufacturing organizations, but with the bait of long discounts and low prices (made possible by small developmental expense and low sales costs), they can lure from the older manufacturers dealers who would like to gamble that they can sell an unknown refrigerator almost as well as one with a national reputation.

As these newer manufacturers, staffed with men trained by the pioneers, make inroads into the total business done by the industry, the older manufacturers are forced to reduce their payrolls still further, which releases more trained men—and so on in a "vicious circle."

You Can Come In; But You Can't Get Out

The entire situation provokes one thought which should encourage everyone connected with the industry, and which may even be consoling to the pioneer manufacturers: Practically every man with any mental wattage who gets into the industry sees its possibilities, and will fight like a wildcat to stay in it.

(Some indication that this situation is a bit unique might be gleaned from the story of John H. Patterson, founder of the National Cash Register Co., and "the Napoleon of modern sales promotion." It was Mr. Patterson who worked out and developed the formula on which electric refrigeration sales organizations are built. He, too, hired, trained, and fired a great many good men. But when these men left Patterson, they did not go out and help build up new cash register manufacturing concerns. They applied the specialty selling technique they had learned to the merchandising of other products.)

Today the electric refrigeration industry holds forth an almost unparalleled opportunity for individual progress and development. And attesting to the truth of this statement is the fact that dozens, possibly hundreds, of *men who have had bitter experiences* in their electric refrigeration connections, do not wash their hands of the industry, but come back to give it another whirl, and another, and another. It must be a good business!

GLEANINGS
FROM RECENT PERIODICALS

CONTAGIOUS, AND USUALLY FATAL

I HAVE just been talking with a chap who is going to make a million dollars in the mail-order business. It's a push-over. He told me so himself. When I had examined his set-up, and looked a bit into production costs, I told him very firmly that his profit margin was away too low. He smiled condescendingly, and informed me that that was the big idea. "We'll make it up on volume!" he said brightly.

The only appropriate answer to that one is "Oh yeah?" This volume craze is an affliction that is in no way confined to the mail-order gentry. Everybody has it. But has anyone sat down to figure out calmly just how much more business we'll have to book in order to make up for those normal profits we have so serenely passed up? And how much is it going to cost us to force these surplus stocks upon a world that is suffering from anemia-of-the-pocketbook, anyway?

The plain truth is that we are all as volume-crazy as the old lady who bought eggs at a penny apiece and sold them at 12 cents a dozen.

Somehow or other, we must get over this cockeyed notion that nothing, multiplied by a million, mysteriously becomes a hell of a lot of money.—*Sales Management.*

Questions on Refrigerator Tax

Discounts on Wholesale Price

Electric refrigerator manufacturer "X" asks:

"We would like to ask you a question in regard to the application of the 5 per cent tax on mechanical refrigerators.

"In our case we have some territories that are covered by distributors obtaining the maximum wholesale discount and in other territories we sell through commercial salesmen to retail dealers, the dealer discount being less than the distributor discount but the commission to the salesman just about making up for the difference.

"As we understand it, the 5 per cent tax applies on the wholesale net. In that case, we are wondering just how to handle tax on sales and shipments to dealers where we have to charge him 5 per cent on his net and remit that amount to the revenue department. This would then be paying the government more than 5 per cent on the wholesale net. On the other hand, if we shall bill the dealer the tax as an extra on the basis of 5 per cent on the wholesale net, you can very quickly see what the wholesale net is by a little computation.

"There must be some other refrigerator manufacturers who have similar conditions and some who have branches instead of distributors or dealers where they are selling direct to the consumer. Just how do they propose handling it?"

A Suggestion on Discounts

Electric refrigerator manufacturer "Y" suggests:

"We have practically the same problem in our business which confronts Manufacturer "X" and we have taken care of this matter by increasing our list prices—said increase in list prices includes the tax, but in practically all cases the increase is slightly more than the tax.

"In doing this the company must be very careful not to say that the increase represents the tax. They can say that the increase is due to the tax being put through and in some cases represents the tax plus the additional cost of administering same.

"One other way of handling the matter is to have two price-lists: one for wholesale and the other for retail trade and have the list price on retail trade include tax, in which case the government has ruled that you can still pay tax to the government on the basis of your average wholesale price."

Orders Placed Prior To June 20

Electric refrigerator manufacturer "X" asks further:

"Since I wrote you, we have had communications from several of our large accounts who placed bona fide orders with us during the months of March and April, with shipments scheduled throughout the rest of the year.

"They want to know, in view of the fact that they are bona fide orders with definite shipping schedules, placed before there was even any talk about a tax on refrigeration and before the bill was passed, whether we will be compelled to pay the tax on such refrigerators as shipped to them on these place orders after June 20 and if they will have to pay us the tax.

"I wish you would also advise me, if you will, what is your interpretation in such a case as this, as well as the other information which I have asked for."

Accessories Tax

One accessories manufacturer writes:

"In the June 8 issue of your publication, we note that you carry on the front page, a short article about the 5 per cent tax on mechanical refrigerators.

"Yesterday, another paper called our attention to the fact that there was also a 5 per cent tax on refrigerator accessories. We are combing every source of information to ascertain just what is meant by accessories.

"No doubt, you have given the mechanical refrigerator clause in the new tax considerable study and we would like to know if our refrigerator pans, refrigerator dishes and defrosting pans are taxable, when sold to either refrigerator manufacturers, or to stores which sell them for use in mechanical refrigerators.

"Let us point out that our so-called defrosting pans are nothing more than baking pans, which we have been manufacturing for years. The refrigerator pans and refrigerator dishes are also used in ice boxes.

"We have not been able to get a comprehensive decision from any source as yet and perhaps you will help us out."

Another accessories manufacturer inquires:

"Will you kindly advise us regarding your understanding on government tax on refrigerator accessories such as liquid coolers?

"Is there such a tax and, if so, what do you understand the tax to be?"

Commercial Tax

A manufacturer of commercial equipment says:

"Kindly give us information on the new refrigeration tax as to whether it is on the household or commercial refrigeration or both.

"Please inform us as to where we may obtain this information if you can not give it to us."

Exemption Certificates To Suppliers

Electro Devices Co.
73 Tremont St., Boston
537 E. Delavan Ave., Buffalo
June 23, 1932.

Publisher:

I imagine you will be asked by your subscribers and other friends just how the "Revenue Act of 1932" will apply to the delivery of what we might call "parts" comprising only a portion of the apparatus to mechanize a refrigeration cabinet, or a cabinet in which this apparatus is assembled.

Let me suggest that you inform your readers of the practice employed in the automobile trade. A certificate is given the supplier of, for example, springs to, for instance, Studebaker; this certifies that a revenue tax should not be added to the invoice covering the shipments of springs, that the tax be paid upon the wholesale price when Studebaker delivers the entire vehicle to its wholesale customer.

Undoubtedly, such rulings will be available for the refrigeration trade. It would mean that where we purchase a thermostatic control, the invoice for that thermostat to us should not include a tax addition; our invoice for a complete "Package-Unit" to our customer would not be subject to a tax addition; the operator who assembled our apparatus in the cabinet and then sold the ready-to-use complete refrigerator would then pay a tax upon his wholesale price, adding that tax amount to his invoice.

In requesting any information you can give me I am suggesting that this might be of great interest to the trade through your valuable columns.

I am attaching a copy of such certificate of exemption furnished the Houde Engineering Corp. by the Brockway Motor Truck Corp. by way of illustration.

FRED A. CORNELL,
Manager.

CERTIFICATE OF EXEMPTION
REVENUE ACT OF 1932
Suvdivision (a), (b), or (c) of Section 606.

TO—HOUDE ENGINEERING CORP.
CERTIFICATE No. 129
ADDRESS—BUFFALO.

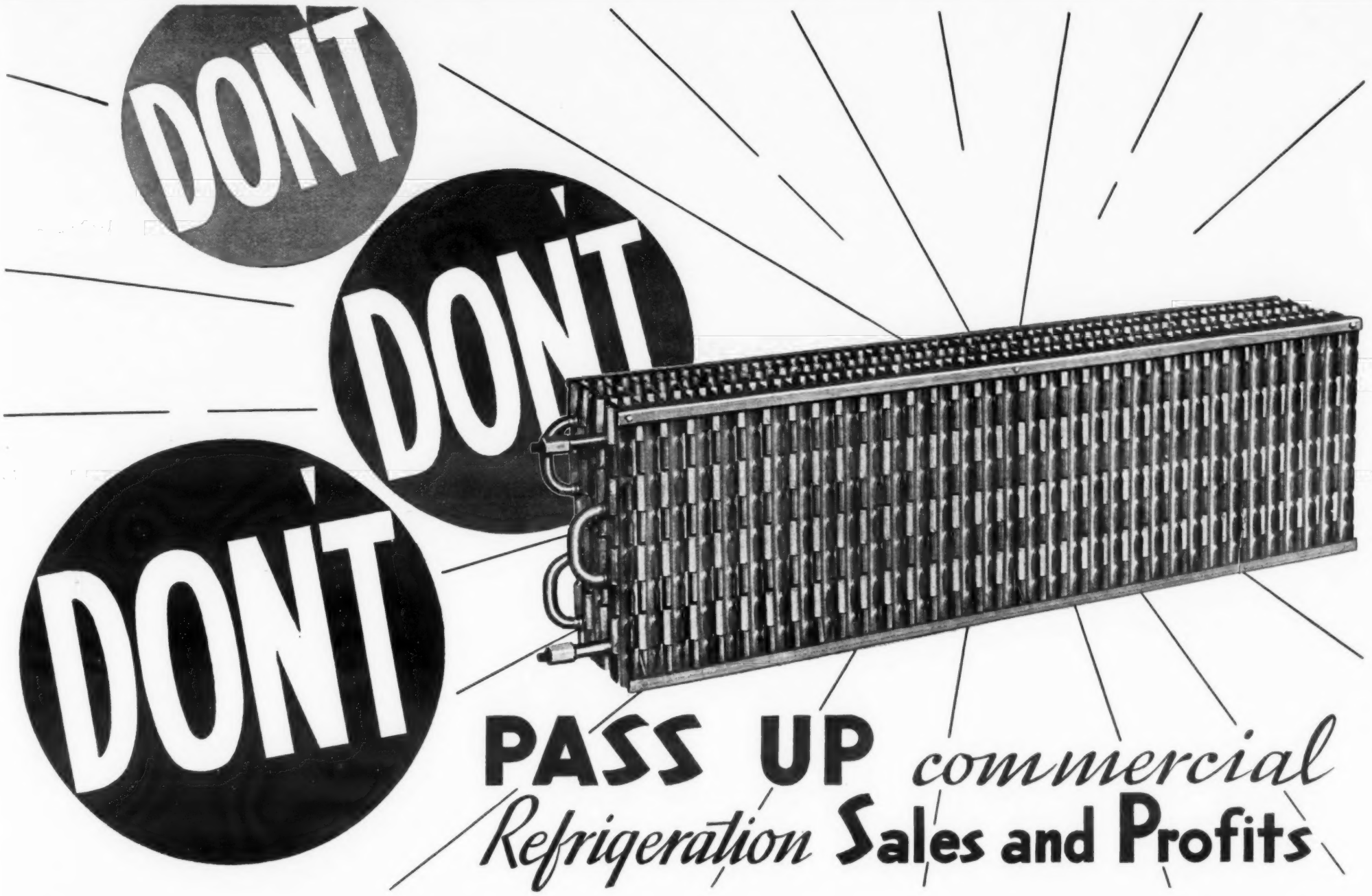
The undersigned hereby certifies that he is a manufacturer or producer of one or more articles enumerated in subdivision (a), (b), or (c), of section 606 of the Revenue Act of 1932, and that the bodies, parts, or accessories purchased hereunder are purchased by him as a manufacturer or producer for use in his manufacturing operations, or for resale in some form or manner, or for free replacement under contract or guaranty, and agrees if any of the bodies, parts, or accessories are sold by him exempt from tax to another manufacturer or producer of articles enumerated in these subdivisions, for like purposes, he will require a similar certificate from such manufacturer or producer. The undersigned further agrees that in respect to all bodies, parts, or accessories sold by him, unless such sale is made under certificate to such a manufacturer or producer, he will pay the tax on such sale direct to the internal revenue collector, including it in his tax return covering the month in which such sale is made, said tax to be paid on the basis of the taxpayer's selling price of such articles when sold other than on or in connection with the sale of new automobile truck chassis or bodies or complete automobile trucks or other automobile chassis or bodies or complete automobiles, or motorcycles, parts, or accessories, and on the selling price of such vehicles or articles when the same includes such articles.

Brockway Motor Truck Corp.
(Signed) W. S. EDDY.

COOKERY BUREAU FORMED IN PITTSBURGH

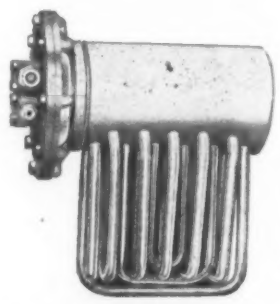
PITTSBURGH—Formation of an electric cookery bureau has been accomplished by the Ochiltree Electric Co., General Electric Hotpoint range and refrigerator distributor here.

Mrs. M. D. Smith, graduate home economist from Albany University will direct the bureau. She will conduct classes two days each week for salesmen. On Fridays she will hold a general school and demonstration for groups of women.

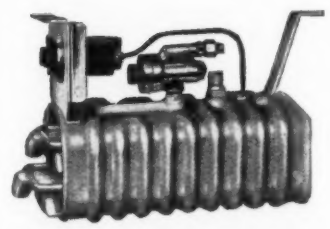


PASS UP *commercial Refrigeration* Sales and Profits

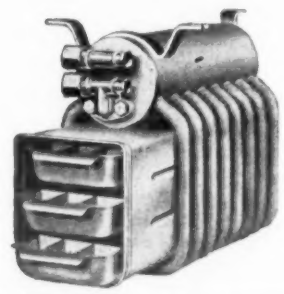
Fedders Model C-137 Ice Cube Maker



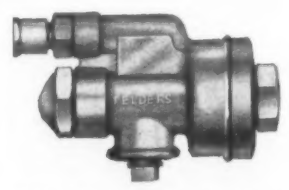
One of the many Cooling Units for Ice Cream Cabinets



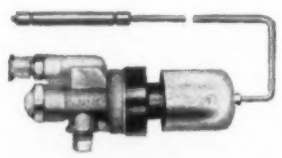
Fedders Prestalloy Dry Expansion Evaporator with Automatic Expansion Valve



Fedders Flooded Tube Cooling Unit with Bucket Float



Fedders Automatic Expansion Valve



Fedders Thermostatic Expansion Valve

Fedders' Complete Line

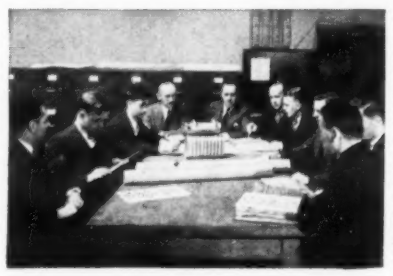
Opens the Door for You

THERE are two sides to the electric refrigeration business, 1. domestic, 2. commercial. You can, and should, profit from both. Practically every grocery, market, delicatessen, soda fountain, hotel, restaurant, club, florist, is a prospect for commercial installations. Commercial refrigeration runs into worth-while dollar volume and profit. It stimulates and goes hand-in-hand with sales of related store and restaurant equipment.

If it's a change-over job from ice to electric refrigeration you will find Fedders equipment to fit. If it's a new installation you will find Fedders equipment for every size display case, storage bunker, market cooler or ice cream cabinet.

All tubes and fins are made of copper. The heat transfer capacity of copper is the highest of any known commercially used metal. It is also far superior to other commercial metals in resistance to corrosion.

Fedders patented fins are corrugated to form hexagon flues which give greater strength and create turbulence to the circulating air.



The Fedders staff of refrigeration engineers has devoted years to developing and perfecting a complete line to fit every commercial job. Fedders engineering is responsible for the many exclusive and patented features which contribute to their performance, efficiency, and long life in dry and flooded systems. That's why many leading manufacturers have adopted Fedders refrigeration units as The Standard.

Fedders Non-Frost Fins are fused to the tubes by a new process, (patent applied for.) This improved metal-to-metal bond gives practically one-piece construction with greatest heat transfer capacity. It also eliminates annealing, maintains original strength, prevents oxidation and permits the beautiful Fedders silver-satin finish.

The complete Fedders line of Non-Frost Commercial Evaporators, Cooling Units and Expansion Valves and Filters is described in the latest catalog and data book just off the press. Write Dept. N for your copy . . . it may give you a better idea of the moneymaking possibilities of Commercial Refrigeration Sales in your territory. The coupon is for your convenience.

FEDDERS MANUFACTURING CO.
57 Tonawanda Street, Buffalo, N. Y.
EXPORT DIVISION: 116 Broad Street, New York City
PACIFIC COAST REPRESENTATIVES:
Refrigeration Products, Ltd.,
1110 North Alameda St., Los Angeles, Cal.
1185 Mission St., San Francisco, Cal.
Fedders Appliances are fully patented and will be protected

FEDDERS MANUFACTURING CO., DEPT. N
57 Tonawanda St., Buffalo, N. Y.

Kindly send me copies of your latest bulletins on:

☐ Domestic Cooling Units ☐ Commercial
☐ Evaporators ☐ Expansion Valves
☐ I am interested in knowing more about the sales possibilities of Commercial Refrigeration.

NAME _____
FIRM _____
ADDRESS _____

FEDDERS

BUREAU INTERPRETS NEW REVENUE BILL

(Continued from Page 2, Column 5)

is to be returned and paid to the collector of internal revenue during the month succeeding that in which such sales are made, even though the price may not be paid to the manufacturer until a later date.

Article 9. **Basis of tax on leases, instalment sales, and conditional sales.**—Special provisions are made in the Act for computing taxes due in the case of leases of articles and instalment and so-called conditional sales. The term "lease" means a continuous right to the possession or use of a particular article for a specified term. It does not include the use of an article merely as occasion demands, but the contract must give the lessee the right to possess or use the article, without interruption, for a definite period of time.

Where articles are leased by the manufacturer, or where articles are sold under an instalment-payment contract, or under a conditional-sale contract with payments to be made in instalments, a proportionate part of the total tax shall be paid upon each payment made with respect to the article. Such taxes are to be returned and paid to the collector of internal revenue during the month succeeding that in which such payment is made. For instructions as to the filing of returns and the payment of tax to the collector of internal revenue see articles 67 and 68.

Article 10. **Charges for coverings, containers, etc.**—Any charges for coverings, containers, etc., incident to placing the article in condition packed ready for shipment shall be included as a part of the sale price for the purpose of computing the tax. Therefore, the amount paid for the article and its covering or container is the basis for computing the tax even though a separate charge for such covering or container is billed on the invoice. If there is an agreement that the manufacturer will refund to the purchaser a specified amount upon return of the covering or container, the tax nevertheless attaches to the whole price, including the amount agreed upon to be refunded. However, when such coverings or containers are returned by the purchaser, and the manufacturer actually refunds the amount agreed upon, the manufacturer may file a claim for refund on Form 843, or take credit on any subsequent monthly return for that portion of the tax paid on the part of the price actually refunded to the purchaser. (See article 71.)

Article 11. **Exclusion of tax.**—The tax imposed on the sale of any article enumerated in these regulations is not a part of the sale price of such article. If the tax is included in the sale price of an article the amount of such tax should be excluded in computing the tax due, regardless of whether it is shown on the innvoice as a separate item. A manufacturer may compute the tax upon his sale price and bill the exact amount of the tax to his customers as a separate item, but where no separate charge is made as tax it will be presumed to be included in the price charged for the article.

If an article subject to tax at the rate of 5 per cent is sold for $100 and an item of $5 is billed as tax, it is clear that $100 is the taxable selling price and $5 the amount of tax due thereon. However, if the article is sold for $100 with no separate billing or indication of the amount of tax, it will be presumed that the tax is included in the $100, and a computation will be necessary to determine what portion of the total amount represents the sale price of the article and what portion the tax. If the tax on the article is 5 per cent of the sale price it is clear that the $100 includes a basic sale price (100 per cent) and the tax thereon (5 per cent). Consequently, in order to determine the amount of the tax, the $100 must be divided by 105, resulting in a quotient of $95.24, which is the sale price of the article. If the $95.24 is either subtracted from $100 or multiplied by .05 (the rate of tax), the correct tax will be ascertained—$4.76. The same method of computation may be applied where a different tax rate is involved, and the tax is included in the sale price, the amount charged the customer being divided by 100 plus the tax rate, thus ascertaining the sale price of the article and from that the tax thereon.

Article 12. **Exclusion of charges for transportation, delivery, etc.**—Charges for transportation, delivery, insurance, installation, and other charges which have no connection whatever with the manufacturing process or with placing the article in a finished condition packed and ready for shipment, are to be excluded in computing the tax. Any additional charge which a purchaser would not be required to pay if he accepted delivery of the article at the factory may be so excluded.

These additional charges may not be excluded in computing the tax unless the amount thereof and the fact that they represent fair charges are established by adequate records to the satisfaction of the Commissioner. (See article 69, relative to the keeping of records.)

Article 13. **Discounts and adjustments.**—Readjustments in sale price (such as allowable discounts, rebates, bonuses, etc.) can not be anticipated. The tax must be based upon the original price unless such readjustments have actually been made prior to the close of the month in which the tax upon the sale is returned. However, if the price upon which the tax was computed is subsequently readjusted, a proper credit may be taken against the tax due on a subsequent return, or an appropriate claim for refund may be filed. (See article 71.)

Where articles are sold over a period of time under an agreement for a quantity rebate, or an agreement for a so-called wholesale bonus, and an adjustment in price is actually allowed in accordance with such agreement, the tax may be adjusted in the return for the month in which the price is finally determined, or a claim for refund may be filed. (See article 71.)

Where articles are sold under an agreement which provides for a rebate in the case of a price reduction applicable to such articles remaining unsold in the hands of a dealer, and a rebate is made in accordance with such agreement, a corresponding adjustment of tax paid may be effected through a credit or claim for refund. (See article 71.)

Commissions to agents are not deductible from the price under any conditions for purposes of tax computation under Title IV.

Article 14. **Exchanges, etc.**—If articles sold are returned and the sale entirely rescinded by refunding the entire amount paid, including tax, no tax is payable on the transaction and, if paid, the tax may be credited or refunded. (See article 71.) If a part only of the articles sold at one time, or a covering or container, is returned, and credit or rebate allowed by the vendor therefor, the portion of the tax to be credited or refunded will be the proportion of the total tax paid which the portion of the sale price allowed as a credit or rebate bears to the total sale price of all the articles.

If an article is sold under a guaranty as to its quality or service and is thereafter returned and a rebate made pursuant to the guaranty, the manufacturer may claim credit or refund of such portion of the tax originally paid in respect of the article as is proportionate to the part of the price refunded.

Where any taxable article is returned to the manufacturer thereof for adjustment, replacement, or exchange, under a guaranty as to quality or service, and a new article given pursuant to guaranty, free, or at a reduced price, the tax shall be computed on the actual amount, if any, to be paid to the manufacturer for the new article.

BASIS OF TAX (FAIR MARKET PRICE)

(Under Sections 619 (b) of the Revenue Act of 1932.)

Article 15. **Fair market price in case of retail sales, consignments, etc.**—The "fair market price" within the meaning of the Act and these regulations is the price for which articles are sold by manufacturers at the place of manufacture or production in the ordinary course of trade and in the absence of special arrangements. Where, for any reason, a manufacturer's sale price does not properly reflect the price for which similar articles are sold at the place of manufacture or production in the ordinary course of trade by manufacturers and the sale is not an arm's-length transaction, the tax shall be computed upon a fair market price.

Where, through the existence of special arrangements between a manufacturer and a purchaser (as in the case of intercompany transfers at cost or at a fictitious price), the price for which articles are sold by the manufacturer does not reflect a fair market price, the sale is regarded as one made "otherwise than through an arm's-length transaction." In such cases the tax shall be computed upon a fair market price, which, under the Act, the Commissioner is empowered to determine.

Where a manufacturer sells articles at retail, the tax on his retail sales ordinarily will be computed upon a price for which similar articles are sold by him at wholesale. However, in such cases it must be shown that the manufacturer has an established bona fide practice of selling the same articles in substantial quantities at wholesale. If he has no such sales at wholesale, a fair market price will be determined by the Commissioner.

If a manufacturer sells regularly at wholesale at several varying but bona fide rates of discount, ordinarily his average selling price for the smallest wholesale lots, will be the basis of tax with respect to retail sales. All sales at wholesale are subject to tax on the basis of the actual sale price of each article so sold.

If a manufacturer delivers articles to a dealer on consignment, retaining ownership in them until disposed of by the dealer, the manufacturer must pay a tax on the basis of the fair market price, which will ordinarily be the net price received from the dealer.

USE BY MANUFACTURER, PRODUCER, OR IMPORTER

(Under Section 622 of the Revenue Act of 1932.)

Article 16. **Tax on use by manufacturer, producer, or importer.**—The Act provides that if a person manufactures, produces, or imports any article enumerated in Title IV, except tires and inner tubes, and uses it for any purpose (other than as material in the manufacture or production of, or as a component part of, another article manufactured or produced by him, which will be taxable under Title IV or sold tax free under the provisions of article 7 to another manufacturer of taxable articles), he shall be liable for a tax on the use of the article in the same manner as if it was sold by him. The tax on the article so used shall be computed on the fair market price as

The Act further provides that if a person manufactures, produces, or imports tires and/or inner tubes, and sells them on or in connection with, or with the sale of, automobiles or motor cycles, or if he uses them for any purpose whatever, he shall be liable for tax in such cases as if such tires and inner tubes were sold by him as separate aritcles. The tax on tires and inner tubes so sold or used shall be computed at the respective rates of 2¼ and 4 cents a pound. (See articles 19 to 21, inclusive, and article 40.)

EXEMPT SALES

Article 17. **Sales to the United States Government or to a State.**—The tax applies to articles enumerated in Title IV (except articles taxable under section 610, relating to the tax on firearms, etc.) when sold to the United States Government. (See, however, article 3.) The tax applies to articles enumerated in Title IV when sold to the government of the District of Columbia, or a Territory or possession of the United States.

The tax does not attach to sales of any articles to States or political subdivisions thereof to be used in the exercise of an essential governmental function, provided such sales are made direct by the manufacturer to a State or political subdivision thereof without any intervening sale to a dealer or distributor.

Article 18. **Sales for export.**—The articles enumerated in Title IV are not subject to tax when sold for export or for shipment to a possession of the United States by the manufacturer thereof and in due course so exported or shipped. (See articles 74 to 76, inclusive.)

CHAPTER VII

RADIO RECEIVING SETS, ETC., AND PHONOGRAPH RECORDS

(Under Section 607 of the Revenue Act of 1932.)

Article 44. **Scope of tax.**—The tax imposed under section 607 attaches to the sale by the manufacturer of (1) articles specified in such section suitable for use in connection with or as part of a radio receiving set or a combination radio and phonograph set (regardless of actual use), including parts and accessories for any of such articles when sold on or in connection therewith, or with the sale thereof, and (2) records for phonographs.

In case two or more articles subject to tax are sold in combination the tax attaches to the sale of each article as a separate transaction. However, if a purchaser of tax-paid articles assembles them and sells the assembly, no tax is due on the sale unless some other taxable article is added.

Where a person assembles taxable articles manufactured by him with articles purchased tax paid from other manufacturers, the sale of the assembly is subject to the tax only with respect to the articles manufactured by the assembler. However, in order to avoid payment of the tax on the entire assembly, tax-paid articles purchased by the assembler from other manufacturers should be separately billed.

Automatic devices for playing or repeating records, phonograph pick-ups, home-recording apparatus, and similar devices are subject to the tax if sold on or in connection with or with the sale of radio receiving sets or combination radio and phonograph sets.

Article 45. **Radio apparatus.**—The term "chassis" includes all types of radio receiving apparatus.

The term "cabinets" includes all containers suitable for housing radio receiving sets or combination radio and phonograph sets, such as tables, bookcases, desks, and other articles designed and manufactured for the accommodation of a radio receiving set or a combination radio and phonograph set.

The term "tubes" includes all types of vacuum tubes suitable for use in connection with or as a part of a radio receiving set or combination radio and phonograph set.

The term "reproducing units" includes all apparatus for the amplification or reproduction of sound which are suitable for use in connection with or as part of a radio receiving set or a combination radio and phonograph set.

The term "power packs" includes all devices which are suitable for use on or in connection with or as a part of a radio receiving set or a combination radio and phonograph set, which convert ordinary commercial or domestic voltages into electric current suitable for operating such sets.

The term "phonograph mechanisms" includes devices which are suitable for use in combination radio and phonograph sets for the purpose of playing records.

Article 46. **Phonograph records.** — All phonograph records are subject to tax regardless of the substance of which made or the manner in which used.

Article 47. **Rate of tax.**—The tax is payable by the manufacturer at the rate of 5 per cent of the sale price as outlined in articles 8 to 15, inclusive.

CHAPTER VIII

MECHANICAL REFRIGERATORS AND REFRIGERATOR COMPONENTS

(Under Section 608 of the Revenue Act of 1932.)

Article 48. **Scope of tax.**—The tax is imposed on the sale by the manufacturer of **(a)** household type refrigerators and **(b)** refrigerator components suitable for use as a part of or with household type refrigerators.

Article 49. **Refrigerators.**—The term "household type refrigerators" includes those for single or multiple cabinet installations which are operated with electricity, gas, kerosene, or other means, but does not include refrigerator cabinets cooled entirely by ice. Refrigerators for commercial use of a large volume or capacity, and of a type not used in the household, are not within the scope of section 608.

Parts and accessories for household type refrigerators are subject to the tax when sold on or in connection therewith or with the sale thereof.

Article 50. **Refrigerator components.**—The term "refrigerator components" includes cabinets, compressors, condensers, expansion units, absorbers, and controls for, or suitable for use as a part of or with, household type refrigerators, including in each case parts or accessories for refrigerator components sold on or in connection therewith or with the sale thereof.

Article 51. **Application of tax.**—Where a household type refrigerator is sold, the tax is based upon the sale price of the assembly, which includes all refrigerator components, and all parts and accessories therefor, sold on or in connection with, or with the sale of, the refrigerator.

A manufacturer of refrigerator components may sell such articles tax free to a manufacturer of household type or other refrigerators or of refrigerating or cooling apparatus. If, however, a manufacturer of household type refrigerators buys refrigerator components upon which a tax has been paid he may take credit against the tax due on his sale of completed household refrigerators to the extent of any tax paid on refrigerator components forming a part of such assembly. (See article 71.)

General provisions with respect to the sale of articles tax free for further manufacture or for assembling into taxable articles and use or resale thereof, are set forth in articles 7 and 16.

Article 52. **Rate of tax.**—The tax is payable by the manufacturer at the rate of 5 per cent of the sale price, as outlined in articles 8 to 15, inclusive.

CHAPTER XIV

MISCELLANEOUS PROVISIONS

ADMINISTRATIVE PROVISIONS

MONTHLY RETURNS AND PAYMENT OF TAX

(Under Section 626 of the Revenue Act of 1932.)

(a) Every person liable for any tax imposed by this title other than taxes on importation * * * shall make monthly returns under oath in duplicate and pay the taxes imposed by this title to the collector for the district in which is located his principal place of business or, if he has no principal place of business in the United States, then to the collector at Baltimore, Maryland. Such returns shall contain such information and be made at such times and in such manner as the Commissioner, with the approval of the Secretary, may by regulations prescribe.

(b) The tax shall, without assessment by the Commissioner or notice from the collector, be due and payable to the collector at the time so fixed for filing the return. If the tax is not paid when due, there shall be added as part of the tax interest at the rate of 1 per centum a month from the time when the tax became due until paid.

(NOTE, official.—The provisions of section 702, applicable with respect to returns of taxes collected under section 625, are substantially the same as the provisions of section 626.)

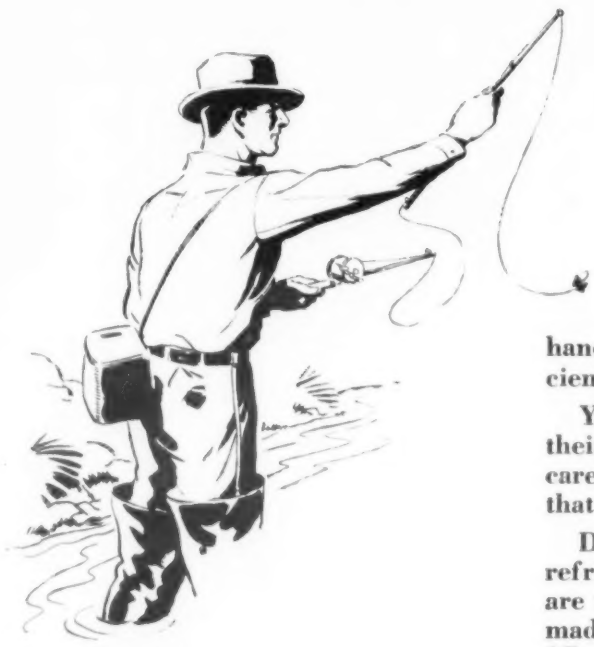
APPLICABILITY OF ADMINISTRATIVE PROVISIONS

(Under Section 627 of the Revenue Act of 1932.)

(NOTE, official.—The applicable provisions of law will be considered hereinafter under appropriate subjects.)

(Concluded on Page 14, Column 1)

You Wouldn't Fish with a Broken Rod... *Would You?*

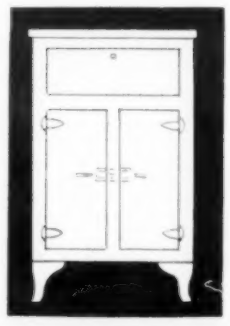


YOU wouldn't think of handicapping yourself with half-efficient tackle on a fishing trip.

Yet a few manufacturers handicap their refrigerators by housing their carefully designed units in cabinets that are only half efficient.

Don't make this mistake with your refrigerator. TENNESSEE CABINETS are worthy of the finest units. They're made accurately—by a firm with over 37 years' experience in refrigerator manufacture. Their construction is supervised by refrigeration engineers . . . men who have devoted years to a study of all kinds of refrigeration. When you wish, these same engineers can work with your designing staff to determine the cabinet best suited to your needs.

However good the unit, a refrigerator can be no better than its cabinet. Write or wire today for quotations.

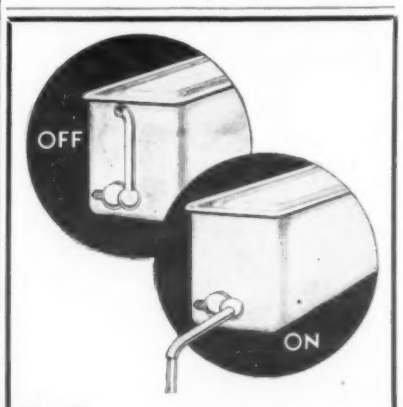


TENNESSEE CABINETS

Refrigerator Division

Tennessee Furniture Corporation

Chattanooga, Tenn.



MR. DISTRIBUTOR:

. . . you get a better discount on the

COLDRINK

Before you stock any line of water coolers write for Hamburg Bros.' proposition on Coldrink . . . . the best discounts in the business and a low retail price. See the new seamless model which fits all electric refrigerators. White enamel with rounded corners, chromium finish, fast flowing faucet. Can never rust. Cash in on this fast selling specialty now.

HAMBURG BROS.

963 Liberty Ave., Pittsburgh, Pa.

SEEGER FOLDERS AID SALE OF EQUIPMENT

ST. PAUL—Seven sales-slanted folders issued by the Seeger Refrigerator Co., this spring, describing Seeger models from the point of view of specific uses for them, have proved one of the most successful series ever put out by the company, according to "Jack" Leonard, Seeger sales manager.

The folders deal, respectively, with display cases for meat markets and delicatessens; Seeger ice-maker; self-contained and grocer display cabinets; overhead bunker cabinets, and standard commercial models.

The folders on meat market and delicatessen display cases dwell on the appeal which appetizing displays make to the women who comprise most of the customers in such establishments.

Picture Ideal Display

The inside pages in each of these show two cases in full color, filled with foods in an ideal display. Detailed arrangements for food trays on the shelves of the display cases are shown for the assistance of the merchant. Full specifications are given.

Two models of the new Seeger ice-maker, the No. 1 and No. 2, are shown in the folder on ice-makers. Both models are all porcelain. Copy on the folder is built around the question "what, no ice?" bringing out that the Seeger ice-maker answers this question for hotels, homes, hospitals, clubs, restaurants, stores, etc.

A new size in commercial cabinets is also shown in this folder, the models P-27 and L-27 (all-porcelain, and lacquer-galvanized steel, respectively), built with overhead coil or tube compartments. The boxes have net capacity of 26.6 cu. ft., respectively.

Commercial Model

Introduced and originated by Seeger was the self-contained commercial model, for installations where placing of the compressor unit within space occupied by the cabinet itself is a necessity, and it is discussed in another of the folders.

Six such models are shown, five of which are all porcelain, and the other lacquer and spruce. In the same folder are illustrated and described four grocer display models, two of which are display cases and the other two all-porcelain cabinets.

Fourteen of Seeger's 1932 overhead bunker models are shown in a folder which sounds as its keynote "more food space, less floor space." Seven are all porcelain, the other seven lacquer and galvanized steel. Complete specifications are given in this folder, as in the others.

The line of standard Seeger commercial models is shown in the last of the series of folders. Running across the bottom of the folder is a line giving uses of the cabinets: cafeterias, delicatessens, hospitals, restaurants, hotels, clubs, and at the top is a line which says "commercial cabinets for ice, electrical, mechanical refrigeration."

The folders are on heavy cardboard paper, and fold to letter-size. In each case two-color printing has been used, and in each case, a tie-in with the other folders is made in a little paragraph at the end of the back page.

PEIRCE-PHELPS DEALERS DISCUSS SALES PROBLEMS

PHILADELPHIA — Peirce-Phelps, Inc., Majestic distributor in the Philadelphia area, held a meeting for all dealers in the Peirce-Phelps building, Fifth and Noble Sts., last Thursday.

The general meeting culminated a series of individual meetings, the purpose of which has been to give dealer organizations a better knowledge of the Majestic refrigerator and sales methods.

A meeting for the sales organization of the distributor took place recently at the Philadelphia Cricket Club to give plans for the promotion of Thor washing and ironing machines and the Monarch electric range.

J. Trevor Peirce, president; C. M. Phelps, secretary-treasurer, and D. Wilson Mayberry, sales manager, were speakers.

BOSTON DISTRIBUTOR FOR GIBSON CONDUCTS MEETING

BOSTON—H. A. Berckelman, Boston sales manager of the H. M. Tower Corp., Gibson distributor, spoke at the bi-monthly sales meeting of the company last week.

E. H. Stone, who won third prize in the recent national dealer-signing contest sponsored by Gibson, was also a speaker.

Salesmen were told that last week was a record week in the signing of new dealers in Boston, with seven dealers added to the list in Worcester County.

Special dealer showings were held in Boston, Worcester, Mass., Fitchburg, Mass., Fall River, Mass., Lowell, Mass., Lawrence, Mass., and Providence, R. I.

There is no refrigerator produced today with insulation sealed against the penetration of water vapor.

Unlike water itself, water vapor has amazing qualities of penetration and no commercial treatment has as yet been devised to prevent its attack on insulation.

It is plain, then, that to be effective an insulation should continue to resist heat even in the presence of an increasing amount of moisture. As any refrigerator grows older in use its insulation becomes increasingly subject to deterioration because more and more moisture is accumulating.

The insulation will resist moisture exactly in proportion to the resistance of its component fibres.

Many tests have been made in commercial and university laboratories that show the relatively slight effect of moisture on Dry-Zero Pliable Slab Insulation. This is due to the negligible effect moisture has on the tropical Ceiba fibre from which Dry-Zero is made.

Any one who is really interested in learning what happens to insulation in the presence of moisture—which inevitably penetrates any refrigerator wall—can make this simple test.

Place samples of any number of insulations in wide mouth bottles and add a half teaspoonful of water. Then cork and allow to stand. Every sample composed of vegetable fibers will become useless for insulation in from three weeks to eight or nine months—except Dry-Zero, which will be unaffected over any period of time. In most cases the insulation will be reduced to a soggy mass of pulp. In others the insulation will soak up moisture and expand to several times the original size. Only Dry-Zero remains changeless.

The simplicity of this test does not make it any less conclusive. It demonstrates exactly what happens in the wall of a refrigerator after condensation has precipitated moisture inside the insulation.

Manufacturers who want to be sure that the high performance of their refrigerator when new is maintained throughout the life of the cabinet are using Dry-Zero Pliable Slab Insulation. In Electric Refrigeration News' specification issue, 16 makes out of 33 are users of Dry-Zero.

Dry-Zero Corporation, Merchandise Mart, Chicago, Illinois.
Canadian Office, 465 Parliament Street, Toronto.

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN **DRY·ZERO**

HUDSON'S EXHIBITS 9 REFRIGERATOR LINES

DETROIT—Cards enclosed in all packages delivered from the J. L. Hudson Co. department store here, last week invited customers to a special exhibit and demonstration of electric refrigerators.

The card said: "Because this is the time that most persons want advice and assistance in discussing their home refrigeration problems, we have made special arrangements to anticipate your questions in a 10-day exhibit and demonstration of mechanical refrigerators."

A home economist was on the sales floor at all times, and prepared and served frozen dishes to patrons who came in. She also aided in describing the efficient use of an electric refrigerator.

Full displays of the nine lines carried (Apex, Copeland, Electrolux, Frigidaire, General Electric, Kelvinator, Leonard, Norge, Westinghouse) were on the floor, as well as one of the new "Dreadnought" one-ton Copeland commercial refrigerating machines.

A moving picture machine on which the salesmen could run sales promotional films put out by the various refrigerator companies, was available at one end of the sales floor, with a few chairs in order that customers might watch it more comfortably.

GIBSON OUTLET IN HAWAII SPONSORS BASEBALL TEAM

HONOLULU, T. H.—Fighting to reach the same standing on the baseball diamond that it has in the field of refrigerator sales, a baseball team representing Teves & Joaquin Co., Ltd., Gibson distributor in the Islands, this year tied for first place in league standings, and was to have played off the championship game a short time ago.

Allen Steward and Nick Teves coached the baseball nine, which played in the Hawaii League, operating every Sunday at Makiki field.

The team consists of: Shaw, 3b; Nalla, p; Frainelf; Rosario, 3b; Bisho, rf; Au, lf; Steward, coach; Nnuuhiwa, cf; Ezera, rf; Tavares, c; Saida, c; Chock Shee, 2b; Ke, 1b; Steward, 1b; Alvaro, 2b; Nick Teves, manager; Medeiros, rf; Hao, c; Carama, p; Garcia, cf; Cordeiro, ss; Goo, cf; Apoliana.

50 PROSPECTS SECURED AT RANGE SCHOOL

TORRINGTON, Conn. — Torrington Home Utilities, dealer for General Electric refrigerators and Hotpoint ranges here, reports getting 50 good prospect names from a recent cooking school.

Miss Hazel M. Fletcher, home service director of Modern Home Utilities, Inc., was in charge of the demonstration. A model kitchen was erected on the stage of Morrison Hall, where both afternoon and evening programs were held. About 500 persons attended the meetings in all.

L. L. Stacy, advertising manager of Modern Home Utilities, Inc., distributor, was in charge of the promotional part of the program.

CONSUL BUYS MAJESTIC

PHILADELPHIA—Senor Leite, Brazilian Consul in Philadelphia, has purchased a Majestic refrigerator for use in his home.

Work of a Sales Promotion Manager

As Told By Ralph Douglass, Copeland Sales Promotion Manager

By Phil B. Redeker

MT. CLEMENS, Mich.—The activities of Ralph Douglass, who heads the sales promotion department of Copeland Products, Inc., reveal the work of a sales promotion department of a refrigeration manufacturing firm to be that of interpreting factory "thinking" and planning for the dealer, distributor and salesman.

In Douglass' own words, his department functions primarily in making a presentation in "ABC language" of salesmen's helps, a distributor's manual, proper ways of presenting the "User's Bond," of publicity methods, of salesman's contests, use of direct mail, and of successful merchandising methods used by various distributors and dealers within the organization.

Department of Ideas

It is to the sales promotion department that the distributor, dealer, or salesman looks when searching for an effective manner to *present* a sales idea.

A good share of the sales plans and "selling ideas" emanate from the sales promotion department. Douglass developed and put across the Copeland "User's Bond" which has proven effective in interesting users in turning over the names of friends who are "hot" prospects.

The idea wasn't new, Douglass asserts, and after he had made numerous changes in the actual make-up of the printed material which lent dignity and appeal to the bond itself, he was certain that he had a sales-getting promotional piece.

Development of 'User's Bond'

His greatest work with the "User's Bond" was still ahead, however. He had to teach every salesman in the field the proper manner of presenting this bond to the user, for past experience with the same idea had taught him that a very definite technique had to be employed in "hiring" users to send in the name of ready-to-buy prospects.

Talks with sales managers who had used the idea in promoting the sale of other types of appliances, and a personal study of the right and wrong psychology in approaching a user with the bond had formulated in Douglass' mind a very definite code of proper approach methods to be used by the salesman in presenting the bond.

Gives Dealer Instructions

Obviously, he couldn't go into the field and personally tell the story to every individual salesman. What he could do and did do was to write a full set of instructions on how to use the "User's Bond," print up these instructions, and send them out to dealers.

"Now," says Douglass, "I spend a good deal of my time trying to impress the salesman that unless they spend two hours studying the proposition, they will flop when they set out to make use of the 'User's Bond.'"

Another important function of the sales promotion department is the preparation of the "salesman's manual" or "salesman's presentation booklet."

These booklets contain pictures of the various models and features of the refrigerator line, to give visual emphasis to the salesman's story. The pamphlet also carries the fact and figures concerning the line, and serves to refresh the salesman's memory on some of his selling points.

There was a time when such booklets were full of evidence designed to sell the prospect on "refrigeration," but this is no longer necessary, Douglass believes. Booklets formerly in use contained documentary evidence on the necessity of food preservation, and carried many figures showing economies to be effected.

Sold on Refrigeration Ideal

The buying public in every section of the country is now pretty thoroughly sold on the idea of refrigeration, Douglass believes, and the good refrigeration salesman should be well enough versed in the food preservation and economy argument to break through what ignorance the customer may display on the subject of electric refrigeration in general.

The big task for the sales promotion department today is to prepare a salesman's manual designed to sell the *make* of refrigerator which the department is promoting, says Copeland's sales promotion manager.

Dealer's Manual

One of the big jobs within the province of the sales promotion department is the creation of a distributor's and dealer's manual, Douglass points out.

This manual is generally distributed through the regional manager or some field contact representative.

For new distributors and dealers, it serves to introduce the Copeland Co. and its products. The manual prepared by Mr. Douglass and his assistants opens with a number of pages devoted to information concerning the factory operations, history, and personnel of the Copeland Co.

The complete line of Copeland products, with as many details concerning the features of the line as it was possible to include, is presented for the edification of distributor and dealer.

Explains Sales Promotion

The character and placement of national advertising is explained. Last of all is printed a detailed explanation of the sales promotional activities of the factory, which are created for the sole benefit of distributor and dealer.

It is because of this last section that such a manual has value when filed away in the distributor's office. When some sales promotional idea occurs to him, he can bring forth this book to find out if the factory has the kind of material that he needs to put a campaign on.

The manual answers hundreds of questions for the distributor without the necessity of elaborate correspondence with the factory; its inadequacies often bring a number of questions to the distributor's mind, which, when presented to the sales promotion department, open the way for development of new ideas, Douglass avers.

Commercial Sales Manual

The preparation of the commercial sales manual causes the work of the sales promotion department to jut out in bold relief, Douglass believes.

This manual necessarily contains a great deal of technical information, and it is the job of the commercial sales manager or commercial sales specialist to select the material which should go into such a manual.

It is then up to the sales promotion department to put the manual in "ABC language" and to tell a sales story with the manual that will be applicable and intelligible to every different type of prospect—meat market owner, restaurateur, dairy farmer, and numberless other types of commercial prospects.

"Writing down the commercial sales manual," so that it is understandable to both the salesman and the commercial prospects, tells the story of the sales promotion department's work more clearly that any other phase of the activity, or any verbal explanation.

The creation and distribution of direct mail literature is an integral part of the sales promotion department's work. The sales promotion manager must regard the content of the mailing pieces in very much the same light as he considers the stuff that goes into the salesman's manual—whether or not the facts are pertinent to the present character of the buying public, says Douglass.

What is most important in the matter of direct mail efforts, Douglass believes, is to see that it is used correctly—which, to Douglass, means that it must be *followed* by a salesman's call, or must be a *follow-up* to a salesman's call.

"Direct mail literature is designed primarily to make an impression of the product and its name upon the mind of the prospect," Douglass states. "It is only of value when the prospect identifies the salesman who calls some time later with the piece of mail which he had received before. I would like to get dealers and distributors to swear that they were going to use direct mail only when it was possible to have it followed up."

Another of Douglass' activities is the publication of the *Copeland Ice Cubes*, the factory house organ which is brought out in newspaper style.

Publicity falls within the scope of the activities of the sales promotion department. Publicity as an "unpaid for" sales factor is held in high esteem by Douglass, because of the many enthusiastic reports coming from dealers and distributors on the value that they had received from getting items into print.

Technique in Publicity

Successful technique in publicity work is divided into two main classes, Douglass believes. First, the sales promotion department must be able to prepare the type of article that will be accepted by editors. Second, it must make the contacts, and teach its dealers the way of making contacts that will lead to getting the items into the proper publications.

Douglass learned a lot about the second phase of this technique from a dealer acquaintance at a time when Douglass was working with another firm in the refrigeration field. This dealer was "hitting the gong" again and again, in the matter of getting news into the local paper, and Douglass became interested enough to delve into the reasons behind his success.

He found that the dealer was usually to be found in the same golf foursome with the editor on a Sunday morning, and that the dealer handled the presentation of his items to his editor friend so adroitly that scarcely a one was rejected.

By following this technique since he has been with Copeland, Douglass is well on his way to filling the second of two mammoth scrapbooks containing clippings from newspapers and trade periodicals.

And Copeland's sales promotion manager is not at all hesitant in admitting that he spent five months making a contact that brought about the appearance of a small, but important article in a journal that reaches most of the nation's business leaders.

150 G. E. SALESMEN WIN OCEAN TRIP TO BERMUDA

NEW YORK CITY—One hundred and fifty General Electric salesmen, representatives of Rex Cole, Inc., N. C. Ovalle, Inc., and Judson C. Burns, Inc., were passengers on the Cunard liner *Mauretania* on a recent four-day cruise to Bermuda.

The trip was a prize award for winners in the Paul Hichborn record drive contest, and wholesale and commercial contests which had been in progress.

Approximately 35 from the Ovalle organization took the trip; 25 from Judson C. Burns, Inc., were present, and the remaining group came from Rex Cole, Inc.

NORGE OFFICIALS CONDUCT OKLAHOMA CITY MEETING

OKLAHOMA CITY—R. E. Densmore, western sales manager; W. C. Rowles, divisional manager, and James A. Sterling, sales promotion manager of Norge Corp., Detroit, conducted a sales meeting for the Brown Electric Co., Norge distributor here, last week.

The meeting was marked by the announcement of a summer sales campaign. H. A. Barnard is manager of the Brown Electric Co., which covers territory throughout Oklahoma and the Texas Panhandle.

TRAPSHOOT WINNER GETS G. E.

SAN FRANCISCO—A General Electric refrigerator was the first prize in the *San Francisco Chronicle's* annual trapshooting contest.

NORGE DISTRIBUTOR HAS JUDGING CONTEST

DETROIT—A contest, in which entrants are asked their opinion on the length of time that milk will stay sweet in a Norge refrigerator, is now being held by the Republic Supply Corp., Detroit Norge distributor, through four sales outlets.

The milk test contest is being sponsored by Grinnell Bros., 14127 East Jefferson Ave.; Good Housekeeping Shop, 1415 Broadway; Lind Refrigeration Store, 9217 Grand River Ave., and Gardner-White Furniture Co., 5607 West Fort St.

Winner of the contest will receive 100 qts. of Kennedy's milk at regular daily delivery. Prizes, to be awarded to the 100 contestants guessing the nearest to the correct length of time which the milk remains sweet, will be green glass water chillers.

In show windows of each of the stores mentioned, the Norge with the milk therein is shown. The milk is visible to the passer-by, as the refrigerator door has been left open and replaced by a frame work with double rubber gasketing and with plate glass front and rear fitted tightly into the door opening. The dead air space between the two pieces of glass allows the maintaining of correct temperatures.

The milk for the contest was furnished by the W. J. Kennedy Dairy Co., and the dairy company profits by a tie-in in the publicity and advertising of the contest.

Individuals come in to get a ticket of application in the contest, and are inclined to put down about three or four days' elapsed time. When told that from 21 to 25 days would come closer, they often exclaim "I never knew that things would keep that long in an electric refrigerator," according to store attendants.

The tickets are being distributed to W. J. Kennedy Dairy patrons with the regular milk delivery.

MARION SAWYER WRITES ARTICLES FOR MAGAZINES

DETROIT—Miss Marion Sawyer, Kelvinator home economist, is the author of a number of articles in general magazines which have appeared this spring.

"When You Have a Well Stocked Refrigerator, Meal Preparation Is Easy," is the name of an article under her name which appeared in *Better Homes and Gardens* recently. "Gleanings From Refrigeration Test Laboratories" appeared in *Home Economics News*.

"Waste Not—Want Not," originally written as a piece of sales promotional material, was reprinted in full in the May *Southern Public Utilities Magazine*.

ICE-O-MATIC DISTRIBUTOR TO OPEN NEW QUARTERS

BALTIMORE—New quarters at 600 North Howard St., will be occupied by Redding Radio, Inc., distributor of Ice-O-Matic refrigerator, Warren display cases, and Nelson ice cream cabinets, in the near future. A new office in Washington, D. C., is also contemplated.

The new Baltimore quarters will be about two and a half times the size of their present space at 1726 North Charles St.

S. F. Miller has been made a member of the commercial staff of the company, and H. Wilson Yeager has been made sales manager of the household division.

GIBSON SPONSORS BASEBALL TEAM AT GREENVILLE

GREENVILLE, Mich.—The Gibson MonoUnits, baseball nine from the Gibson Refrigerator Corp. ranks here, is preparing for a lively season.

The team consists of: Currie, p.; Outman, lf.; Johnson, rf.; Brown, 1b.; Sutherland, c.; Burgess, cf.; Howell, manager; Wiltshire, ss.; McNally, 3b.; Maxwell, 3b.; Waters, 2b.; Welch, cf.; Woodruff and Moore.

Complete Your Line with MAYFLOWER Commercial Refrigeration

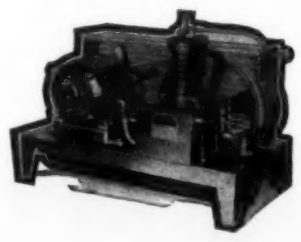
The money-making opportunities in commercial refrigeration today are as great—if not greater—than in the household field.

Grocery stores, butcher shops, restaurants, hotels, clubs, cafeterias, florists, and hundreds of other businesses must have good commercial refrigeration the year 'round.

You can cash-in on this vast market with the complete line of time-proved Mayflower commercial refrigeration equipment—regardless of what household line you sell.

Write or *wire* for full information NOW to:

TRUPAR MANUFACTURING CO.
Dayton, Ohio



Canadian Factory: Mayflower Corp. of Canada, Ltd., Hamilton, Ont.

McCORD
COMMERCIAL EVAPORATORS

McCord Evaporators do not leak at the connections between the coils due to an improved joint developed by McCord for this application. A special frost proof flare-nut is used.
The McCord flared couplers are a tube flared and sheathed in a seamless cup and sealed outside and inside with an integral lead gasket.

McCORD RADIATOR & MFG. CO.—DETROIT MICH.

Wisconsin Man Wins Kelvinator Meat Market Sales Contest

DETROIT—G. Kammerer, Kelvinator commercial salesman for the Wisconsin Valley Electric Co., Wausau, Wis., is the winner of the meat market division of the "Kelvinator Business Builders' Contest," which recently closed.

Commercial salesmen are now working on the second division of the contest, which concentrates on water and milk-cooling equipment.

Second prize in the meat market division of the contest was won by W. S. Morrison, of the Stratton-Terstegge Co., Louisville, Ky., and third by F. Bischofberger, Public Service Co. of Colorado, at Denver.

The prizes were $150, $100, and $75, respectively.

Winners of $50 Prizes

Winners of $50 prizes were R. J. Barre, of the Boston Kelvinator branch; R. A. Day, Detroit branch; I. Hutter, New York branch; Leon Hampton, Sullivan Valve & Engineering Co., Butte, Mont., and W. W. Woodward, Northern States Power Co., Minneapolis.

Fifteen prizes of $25 each were awarded to the following: Leo Wolfe, Albany Garage Co., Albany, N. Y.; Nicholas Carlo, Kelvinator Buffalo Corp., Buffalo; R. A. Pierce, Kelvinator Buffalo Corp.; A. R. Clemons, G. S. Blodgett Co., Burlington, Vt.

E. Roberts, Kelvinator Sales Corp., Long Island City, N. Y.; A. P. Ashner, Graybar Electric Co., Cincinnati, Ohio; W. J. Wisker, Perry B. Whitsit Co., Columbus, Ohio; O. W. Clark, Kelvinator Flint, Flint, Mich.; J. W. Jennings, Kelvinator Sales Co., Gastonia, N. C.

H. Sundheimer, New York branch; R. H. Jancke, Public Service Co. of Colorado, Denver; E. E. Jones, Morley-Murphy Co., Milwaukee; M. T. Stoiber, Morley-Murphy Co., Milwaukee; Guy Winters, Walker Electric Co., Boise, Idaho; J. F. Meoni, Kirkmyer Electric Co., Richmond, Va.

24 Prize Winners

Winners of $10 prizes, numbering 24, are as follows: B. Tweddle, Consolidated Gas, Electric Light & Power Co., Baltimore; A. R. McPherson, Zion Cooperative Mercantile Institute, Salt Lake City; LeRoy Mickel, Arnold M. Bauer, Bridgeton, N. J.; Frank Meeham, Tucker Machine Co., Bridgeport, Pa.; G. A. Roberts, Kelvinator Buffalo Corp., Buffalo; E. J. Sullivan, Kelvinator Buffalo Corp.

Horace W. Wolf, Virginia Public Service Co., Charlottesville, Va.; L. D. Jardin, Wiswell Radio Co., Chicago; J. F. Staples, Kelvinator Sales, Detroit; R. P. Hussey, Kelvinator Bohman Co., Hagerstown, Md.; H. W. Summers, Consumers Power Co., Jackson, Mich.; I. H. Kachel, Metropolitan Edison Co., Reading, Pa.

F. D. McCoy, 555, Inc., Little Rock, Ark.; P. Levine, B. Meyer, and S. Moore, of the New York branch; A. Lennox, Kelvinator Pacific Co., Los Angeles; C. B. Williams, Stratton-Terstegge Co., Louisville; Frank Buchner and F. L. Vanderheeden, Morley-Murphy Co., Milwaukee; P. O. Olson, Northern States Power Co., Minneapolis.

G. L. Carr, Tom Cooper Motor Co., Oklahoma City; S. Seelig, Kelvinator Sales Corp., St. Louis; W. E. Wheeler, Kelvinator Sales Corp., St. Louis, and R. J. Dunphy, Northern States Power Co., Minneapolis.

Prizes of $5 Awarded

Winners of $5 prizes, numbering 49, were: W. LaMare, Albany Garage Co., Albany, N. Y.; R. Turvett, Meachem Fenn, Syracuse, N. Y.; W. R. Zacharias, Werley's, Allentown, Pa.; N. E. Braverman, Werley's, Allentown, Pa.; H. R. Conrad, Werley's, Allentown, Pa.; Samuel Yudkin, Kelvinator of Ansonia, Ansonia, Conn.

A. P. Robinson, D. E. Thorpe, and R. C. Whiteman, Consolidated Gas, Electric & Power Co., Baltimore; R. S. Anderson, Walker Electric Co., Boise, Idaho; H. M. Daugherty, Daugherty Supply Co., Chattanooga, Tenn.; G. Fryder, Commonwealth Edison Co., Chicago.

A. L. Brown, Wiswell Radio Co., Chicago; C. T. Betts, Kelvinator Sales Corp., Cleveland; W. Winter, El Paso Electric Co., El Paso, Tex.; F. X. Steiner, Star Electric Co., Erie, Pa.; Walter Kirves, A-1 Building Material Co., Evansville, Ind.

F. W. Kelly, Kelvinator Kelly Co., Harrisburg, Pa.; George Schofield, Jere Woodring Co., Hazelton, Pa.; Paul Fechtman, Pearson Piano Co., Indianapolis; W. T. Taylor, Western Kelvinator Co., Kansas City, Mo.; Royal F. Baker, Lawrence Gas & Electric Co., Lawrence, Mass.; George Doyle, 555, Inc., Little Rock, Ark.

W. R. Hopper, 555, Inc., Little Rock, Ark.; J. Berg, Golden, R. Jones, P. Loeb, W. Ruroede, N. Simon, W. M. Spiers, and H. G. Stein, New York branch; Otto Hague, Morley-Murphy Co., Milwaukee; R. H. McGinty, Northern States Power Co., Minneapolis.

G. Keating, Rackliffe Brothers Co., New Britain, Conn.; Dorsey Blake, Jr., Raymond-Rosen Co., Philadelphia; S. R. Iverson, Electrical Equipment Co., Phoenix, Ariz.; M. Hannigan, Standard Talking Machine Co., Pittsburgh; H. Newcombe, Cumberland County Power & Light Co., Portland, Me.

A. E. Stuckert, Cleveland branch; W. J. Cracker, Sherman Clay & Co., San Francisco; E. L. Smith, D. T. Lansing Co., Scranton, Pa.; H. M. Davis, James Hailstone, and J. M. Robinson, Central Illinois Public Service Co., Springfield, Ill.

C. A. Davis, St. Louis branch; W. W. Moore, Barber & Ross, Inc., Washington, D. C.; W. V. Reed, Barber & Ross, Inc., Washington, D. C.; Harry Haid, Wichita Kelvinator and Equipment Co., Wichita, Kan.

Wins Another Prize

The greatest number of meat merchant sales made during the period was made by W. S. Morrison, the second prize winner, who was awarded an extra $25 for his feat. George Kammerer, first prize winner, made the second largest number of sales, and got an extra $20. R. A. Day, Kelvinator Sales Corp., Detroit, was third, receiving $15, and R. J. Barr, Kelvinator Sales Corp., Cambridge, Mass., was fourth, receiving $10.

Largest individual sale during the contest was made by E. Swartz, of Kelvinator Pacific, Los Angeles, who was awarded $25; second largest was made by E. Roberts, Kelvinator Sales Corp., Cambridge, Mass., who received $20; third by LeRoy Mickel, Arnold M. Bauer, Bridgeton, N. J., receiving $15, and fourth by George Doyle, 555, Inc., Little Rock, Ark., who received $10.

Highest dealer in each of the five regions was awarded $50. The dealers receiving this award were: Atlantic City Kelvinator Co., Atlantic City, N. J.; Rawls & Jennings, Gastonia, N. C.; La Mere Motor Sales, Albany, N. Y.; Thompson Furniture Co., Boise, Idaho; and Hogan Furniture Co., Chicago.

An additional "mystery prize" will be announced soon.

SPEAR & CO. STORE DISPLAY DRAWS 10,000

NEW YORK CITY—Spear & Co., furniture firm operating two stores, has been appointed Kelvinator dealer here. The display at the Spear store, 22 West 34th St., is said to have drawn about 10,000 people a week into the store.

No Room; So Unit Is Put on Porch

WELCH, W. Va.—The sale of a Kelvinator to a family which hadn't room in the house for it was a feat reported by Paul W. Jones, president of the Jones-Cornett Electric Co., distributor here.

The home is a two-room cabin in the mountains near here. Without room to locate the new refrigerator in the house, it was installed on the porch. The model sold was a Yukon-7.

KELVINATOR ISSUES NEW SALES BOOKLET

DETROIT—"Capacity" is the title of a new booklet in the series called "Kelvinator Sales Slants" which has just been made available to Kelvinator salesmen.

The booklet discusses Kelvinator one-cylinder compressors, and is written from the point of view of an experienced salesman, "Two-Call Hogan," as he talks to a new Kelvinator man, "Jasper Tullis."

REFRIGERATORS GIVEN AS CONTEST PRIZES

DETROIT—Four electric refrigerators, a Sparton, a Frigidaire, a Kelvinator, and a Norge, are being awarded as prizes in the *Detroit Times* Treasure Hunt, which is now in progress.

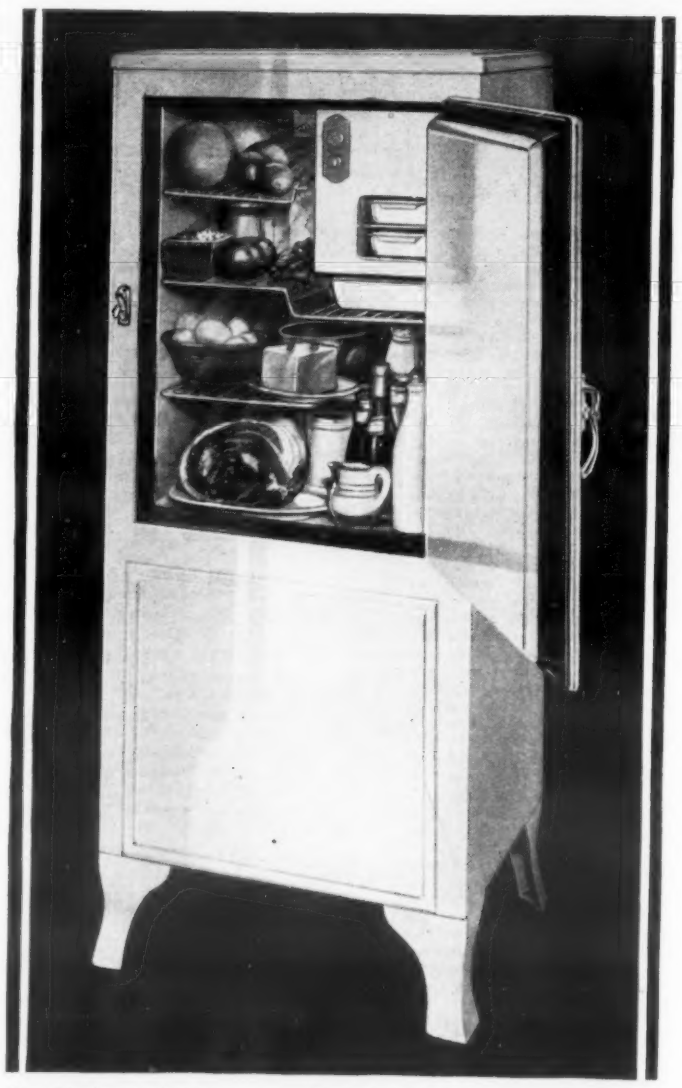
The contest consists of finding four hidden words appearing daily in the *Detroit Times*. Clues as to the hidden words are broadcast each night over radio station WXYZ, along with information and publicity concerning the prizes.

Rules of Contest

Grand prize in the contest, which lasts four weeks, will be an Oldsmobile sedan. Contestants may also enter any one week of the contest, and it is as first prizes for each of the four weekly contests that the refrigerators are being given.

Contestants, after finding the hidden words, send in a list, and also include them in a composition, underlining the hidden words. To compete for the grand prize, contestants must also write a short essay on "Why I Like the *Detroit Times*."

MEET THE *"show me buyer"* ON HIS OWN GROUND AND MAKE MONEY



Four Models to the Line—ranging from 4.1 to 8 cu. ft. capacity. Apartment Model illustrated—5 cu. ft. capacity—fast-freezing, silent unit—no radio interference—8-point cold control—porcelain interior electric lighted—heavy insulation—massive rubber-sealed doors—two-tone hardware.

THE LEADER TO FLAG INTEREST—A Quality 4-Foot Box Factory Priced *at only* $99.95

Sensational New Stewart-Warner Electric Refrigerators offer Sure Profit in market that is looking for greater dollar-for-dollar value

Price on a cheap refrigerator that can't profit the dealer, and can't satisfy the buyer—attracts few buyers today. "Show me value and I will buy" is the challenge of millions who know the worth of a dollar.

Stewart-Warner meets this hard-boiled challenge directly—with the most outstanding dollar-for-dollar value in the refrigeration field. Thus it capitalizes on a situation that is starving those who insist on selling *price* alone.

Live dealers in electric refrigerators—and men who want to get into the field—will recognize that Stewart-Warner has *every* element that makes for smashing success.

A nationally known—nationally advertised name—that has been identified with products of proven quality and dependability for over a quarter of a century . . . a line outstanding in mechanical features, appearance and quality construction . . . prices that are sensationally low for the quality offered . . . and a factory-dealer co-operation that brings prospects into the store.

Get all the facts. Don't wait until somebody else signs up and cashes in on a sure-fire profit opportunity you might have had. Cinch the line that is built to sell in the "show me" market of today. For illustrated folder, prices and complete information on factory co-operation selling plan, mail coupon.

STEWART-WARNER *Electric Refrigerators*

OVER 30 MILLION SATISFIED OWNERS OF STEWART-WARNER PRODUCTS

MAIL THIS COUPON TODAY!

ELECTRIC REFRIGERATOR DIVISION
STEWART-WARNER CORPORATION.

Gentlemen: Please give me all details about Stewart-Warner Refrigerators and money-making Sales Plan

ER-6-29

Name.....

Firm Name.....

Address.....

City..... State.....

BUREAU INTERPRETS NEW REVENUE BILL

(Concluded from Page 10, Column 5)

RECORDS, STATEMENTS, AND SPECIAL RETURNS

(Under Section 1102 of the Revenue Act of 1926. (See 332 CCH, Paragraphs 2270-2272 and 2419-2492).**)**

EXAMINATION OF BOOKS AND WITNESSES

(Under Section 1104 of the Revenue Act of 1926, as Amended by Section 618 of the Revenue Act of 1928. (See 322 CCH, Paragraphs 1930 and 1831.)**)**

Article 67. **Returns**—Every person required to file a return and pay tax, and every person upon whom there is a duty to collect tax under section 625 (b), must make a return, in duplicate, on Form 728 for each calendar month in accordance with the instructions printed on the back of that form. These returns must be under oath and verified before an officer duly authorized to administer oaths. If the amount of the tax is $10 or less, the return may be signed or acknowledged before two witnesses instead of under oath. Such return, accompanied with the tax, must be filed with the collector of the district in which is located the principal place of business of the taxpayer (or if he has no principal place of business in the United States, with the collector at Baltimore, Maryland), on or before the last day of the month following that for which it is made, except where otherwise prescribed under article 70 covering jeopardy assessments.

When the last day of the month in which the return is due falls on Sunday or a legal holiday the return may be filed with the collector of internal revenue, or his authorized representative, on the next secular or business day. A return must be forwarded to the collector for each month whether or not any liability has been incurred for that month. If a manufacturer ceases business the last return should be marked "Final Return."

In the event a vendee, liable for tax under section 625, refuses to pay to the vendor the tax due, the vendor should report to the collector the name and address of such person, the nature of the transaction, the amount involved in the contract, and the date of the payment. Upon receipt of such information the collector will report the item to the Bureau for direct assessment against such person. (See article 73 for penalties for refusal to pay tax.)

Article 68. **Payment of taxes.**—As provided in section 626 (b) all taxes are due and payable to the collector of internal revenue, without any assessment by the Commissioner or notice from the collector, at the time fixed for filing the return. If the tax is not paid when due there shall be added as part of the tax interest at the rate of 1 per cent a month from the time when the tax became due until paid. (See article 73.)

Article 69. **Records.**—Every person required by the Act to file a return and pay tax on the sale or use of an article, shall keep on file at his principal place of business, or some other convenient or safe location, accurate records and accounts of all transactions. Manufacturers of taxable articles who are permitted under section 620 to dispose of their products to other manufacturers free of tax must maintain accurate records of all such transactions, including certificates from purchasers certifying to the fact that the products are purchased for further manufacture of taxable articles, with supporting invoices, etc. Evidence with respect to sales for export, or shipment to a possession of the United States, and sales to States or political subdivisions thereof, upon which no tax is due, must also be maintained. (See articles 17, 18, 74, 75, and 76.)

The records shall contain sufficient information to enable the Commissioner to determine whether the correct amount of tax has been paid. Such records shall at all times be open for inspection by internal-revenue officers, and shall be maintained for a period of at least four years from the date the tax became due or, in the case of tax-free sales, for a period of at least four years from the last day of the month following the month in which the sale was made.

JEOPARDY ASSESSMENT

(Under Section 1105 of the Revenue Act of 1932.)

Article 70. **Jeopardy assessment.**—Whenever in the opinion of the collector it becomes necessary to protect the interests of the Government by effecting an immediate return and collection of tax, the case should be promptly reported to the Commissioner by telegram or letter. The communication should recite the full name and address of the person involved, the kind and amount of taxes due, the period involved, and any other pertinent facts.

A taxpayer who is not in default in filing returns or in paying any tax under the internal-revenue laws, if threatened with a jeopardy assessment, may procure a postponement until the usual time for the payment of the taxes by depositing with the Commissioner, United States bonds of a par value double the amount of taxes due for the taxable period, or by furnishing such other security as may be approved by the Commissioner.

CREDITS AND REFUNDS

(Under Section 3220 of United States Revised Statutes, as Amended by Section 619 (b) of the Revenue Act of 1928 (see 322 CCH, paragraphs 1833-1836); **Section 3228 (a) of United States Revised Statutes, as Amended by Section 619 (c) of the Revenue Act of 1928** (see 332 CCH, paragraph 2248), **and Section 1106 (a) of the Revenue Act of 1932; Section 1106 (b) of the Revenue Act of 1932; Section 621 of the Revenue Act of 1932.)**

Article 71. **Credits and refunds.**—A credit against tax under Title IV or a refund may be allowed or made to a manufacturer in the amount of any tax under Title IV which has been paid by any person with respect to the sale of any article (other than a tire or inner tube), purchased and used by such manufacturer as material in the manufacture or production of, or as a component part of, an article with respect to which tax under Title IV has been paid, or which has been sold free of tax by virtue of section 620, relating to sales for further manufacture. (See article 7.) The claim for credit or refund must be supported by evidence showing (1) the person who paid to the United States the tax for which credit or refund is claimed, (2) the date of payment, (3) the amount of such tax, and (4) the fact that the article was so used.

In the case of a readjustment of price by reason of the return or repossession of an article or a covering or container, or by a bona fide discount, rebate, or allowance, the manufacturer who paid the tax based upon the original price may file a claim for refund or take credit against the tax due upon any subsequent monthly return in the amount of that part of the tax proportionate to the part of the sale price which is refunded or credited to the purchaser. In no case shall such a refund or credit be allowed to the taxpayer in connection with an article or a covering or container sold prior to June 21, 1932. The refund or credit of the tax shall be allowed only if a sworn statement is furnished that the readjustment of the price in question has actually been made. (See article 13.)

No claim for refund or credit shall be allowed in connection with a discount, rebate, or allowance unless the taxpayer submits a sworn statement showing that such discount, rebate, or allowance was actually granted. (See article 13.)

If any person overpays the tax due with one monthly return, he may either file a claim for refund on Form 843 or take credit for the overpayment against the tax due with any subsequent monthly return. In all cases (except those referred to in section 621 (a), discussed under the preceding paragraphs of this article) where a person overpays tax, no credit or refund shall be allowed, whether in pursuance of a court decision or otherwise, unless the taxpayer files a sworn statement explaining satisfactorily the reason for claiming the credit or refund and establishing (1) that he has not included the tax in the price of the article with respect to which it was imposed, or collected the amount of tax from the vendee, or (2) that he has either repaid the amount of the tax to the ultimate purchaser of the aritcle or has secured the written consent of such ultimate purchaser to the allowance of the credit or refund. In the latter case the written consent of the ulitmate purchaser must accompany the sworn statement filed with the credit or refund claim. The statement supporting the credit or refund claim must also show whether any previous claim for credit or refund covering the amount involved, or any part thereof, has been filed with the collector or Commissioner.

A complete and detailed record of all overpayments must be kept by the taxpayer for a period of at least four years from the date a credit is taken or refund claimed.

CLOSING AGREEMENTS

(Under Section 606 (a) and (b) of the Revenue Act of 1928. See paragraphs 1785 and 1786.)

Article 72. **Closing agreements.**—Agreements for the final determination of taxes imposed under Title IV may be entered into under the provisions of section 606 (a) and (b) of the Revenue Act of 1928.

PENALTIES AND INTEREST

(Under Section 626 (b) and Section 627 of the Revenue Act of 1932; Section 3176, as Amended, United States Revised Statutes (see 322 CCH, paragraph 2225); **Section 3184, United States Revised Statutes** (see 322 CCH, paragraphs 1525, 2443, and 2472); **and Section 1114 of the Revenue Act of 1926** (see 322 CCH, paragraphs 2219-2224).**)**

Article 73. **Penalties and interest.**—Every person on whom there rests a duty to file a monthly return on Form 728 who fails to file such return, and to pay over the tax due thereon, during the month which follows that for which such return should be made, is subject to certain penalties and interest. A mere failure to file the return within the following month causes to accrue under section 3176 of the Revised Statutes, as amended, a penalty of 25 per cent of the amount of the tax. Failure to pay to the collector during the month which follows that for which such return should be made, all taxes due under that return, causes to accrue under section 626 (b) of the Revenue Act of 1932, interest at 1 per cent a month from the time when the tax became due until assessed, or until paid prior to assessment. The due date of the tax for the purpose of computing interest is the last day of the month within which the return should have been filed and the tax paid.

Where assessment is made of tax, 25 per cent penalty, or interest, and payment is not made within 10 days after the date of issuance of Form 17 (First Notice and Demand), based on assessment approved by the Commissioner, there will accrue under section 3184, Revised Statutes, a 5 per cent penalty and interest at the rate of 1 per cent per month computed upon the entire assessment from 10 days after issuance of Form 17 until date of payment. Where assessment is settled by partial payments, interest is computed from the expiration of the first 10-day notice through the date of first payment, and from the next succeeding day to the date of the next payment, until the assessment is paid in full.

If a claim for abatement is filed with the collector within 10 days after the date of the issuance of the first notice and demand, the 5 per cent penalty does not attach. If the assessment is not paid within 10 days after the receipt of notice of rejection of the claim, the 5 per cent penalty applies. The filing of the claim does not stay the collection of interest, which continues to run for the full period that intervenes between the date of expiration of the first notice and demand and the date of payment.

If a false or fraudulent return be willfully made, the penalty under section 3176 of the Revised Statutes is 50 per cent of the total tax due for the entire period involved, **including any tax previously paid.**

Under section 1114 of the Revenue Act of 1926 any person who willfully fails to pay or collect any tax due, file return, or keep records, or who attempts in any manner to evade or defeat the tax, is subject to a fine of $10,000 or imprisonment, or both, with costs of prosecution, and is also liable to a penalty equal to the amount of the tax not collected or paid. These penalties apply to an officer or employee who, as such officer or employee, is under a duty to perform the act in respect of which the violation occurs, as well as to a person who fails or refuses to perform any of the duties imposed by the Act, i. e., pay the tax, make return, keep records, supply information, etc.

EXPORTS, AND SHIPMENTS TO POSSESSIONS OF THE UNITED STATES

(Under Section 1121 of the Revenue Act of 1926 (see CCH, paragraph 2485).**)**

Article 74. **Sales for export.**—In order to be exempt from tax it is necessary that two conditions be met, (1) that the article be sold for export, and (2) that it be exported in due course.

An article will be regarded as having been sold for export if the manufacturer has in his possession at the time that title passes or at the time of shipment (whichever is prior), **(a)** a written order or contract of sale showing that the manufacturer is to ship the article direct to a foreign destination or **(b),** where delivery is to be made within the United States, a sworn statement from the purchaser showing (1) that the article is purchased to fill a particular order or contract then held by the purchaser for foreign shipment, or to fill future orders for delivery to a foreign destination, and (2) that such article will be transported to its foreign destination in due course prior to use, resale, or further manufacture within the United States.

In these cases the manufacturer, for a period of 6 months from the date when title passes or the date of shipment (whichever is prior), is excused from paying tax on the articles so sold. If within such period the manufacturer has not received and attached to the order or contract proper "proof of exportation" (see article 75), then the temporary exemption ceases and the manufacturer shall include the tax on the sale of such article in his return for the month in which such 6-month period expires.

Article 75. **Proof of exportation.**—Exportation may be evidenced by (1) a copy of the export bill of lading, or (2) a certificate by the agent or representative of the export carrier showing actual exportation of the article, or (3) a certificate of landing signed by a customs officer of the foreign country to which the article is exported, or (4) where such foreign country has no customs administration a sworn statement of the foreign consignee covering receipt of the article, or (5) where the purchaser, and not the manufacturer, is the exporter, an affidavit from the purchaser for export stating that the article was in fact exported in due course prior to use, resale, or further manufacture within the United States and specifying the evidence referred to under (1), (2), (3), or (4) which he has in his possession covering exportation of the article, and that such evidence is available for inspection by Government officers.

In all cases the sales records together with the evidence of the proof of exportation must be preserved by the manufacturer for a period of at least four years from the last day of the month following the sale, and must be readily accessible for inspection by internal-revenue officers.

In any case where the manufacturer does not have in his possession within the 6-month period proof of exportation as outlined herein, the manufacturer must pay the tax involved. If proof of exportation later becomes available, a claim for refund of any tax paid may be filed on Form 843, or a credit may be taken upon any subsequent monthly return, but such action must be taken within the 4-year period of limitation prescribed by section 3228, United States Revised Statutes, as amended.

Article 76. **Shipments to possessions of the United States.**—The same rulings as relate to sales for export and proof of exportation will apply to sales for shipment to a possession of the United States and in due course so shipped. (See articles 74 and 75.) The term "possession of the United States" includes the Philippine Islands, the Panama Canal Zone, the Virgin Islands, Guam, Puerto Rico, Tutuila, Wake, and Palmyra.

MISREPRESENTATION OF TAX

(Under Section 1123 of the Revenue Act of 1926. (See 322 CCH, paragraphs 2444 and 2496).**)**

Article 77. **Misrepresentation of tax.**—If a manufacturer or other vendor misrepresents the tax, he is guilty of a misdemeanor and is liable to a fine of $1,000 and to imprisonment for a year. This provision is designed, among other things, to prevent a vendor adding more than the amount of the tax to the price of an article and representing that the increase is due to the tax.

FRACTIONAL PART OF CENT

Under Section 1118 (c) of the Revenue Act of 1926. (See 322 CCH, paragraph 2494).**)**

Article 78. **When fractional part of cent may be disregarded.**—In the payment of taxes on articles covered by these regulations, a fractional part of a cent may be disregarded unless it amounts to one-half cent or more, in which case it shall be increased to 1 cent.

ARTICLES MANUFACTURED OR PRODUCED BY INDIANS

(Under Section 624 of the Revenue Act of 1932.)

AUTHORITY FOR REGULATIONS

(Under Section 624 of the Revenue Act of 1932.)

Article 79. **Promulgation of regulations.**—In pursuance of the provisions of section 628, the foregoing regulations are hereby made and promulgated.

DAVID BURNET,
Commissioner of Internal Revenue.

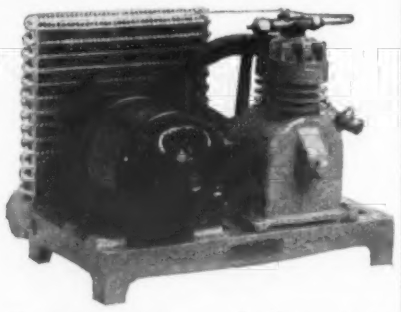
Approved June 18, 1932.

OGDEN L. MILLS,
Secretary of the Treasury.

PRECISION BUILT
UNFAILING PERFORMANCE

DICELER
ELECTRIC REFRIGERATION

—PRODUCTS—



Compressors and Complete Condensing Units for Every Refrigeration Application

DICELER COMPRESSORS are preferred by many manufacturers where dependable compressors are essential to long and efficient service. The growing popularity of DICELER units is due to the rigid inspection of every process during manufacture.

Diceler refrigeration products provide equipment for practically every refrigeration requirement, from the smallest apartment refrigerator to the largest market cooler. Capacities from 89 lbs. to 2,590 lbs. per 24 hours. Our plan allows the assembler to advertise and sell under his own name.

A complete line for use with Sulphur Dioxide or Methyl Chloride, including gas engine driven units for use in rural sections where electricity is not available.

To Manufacturers, assemblers and distributors who are interested in hearing further details a letter will bring complete information.

Deissler Machine Company
Greenville, Pa.

Fulco Refrigerator COVERS
Insure deliveries without scratched or broken enamel. Write for prices.
Fulton Bag & Cotton Mills

REFRIGERATOR CONCERNS IN DALLAS FORM BUREAU

DALLAS, Tex.—The Dallas Association of Automatic Refrigerator Distributors has been organized here with eight charter member-companies.

S. C. Griswold, of S. C. Griswold, Inc., General Electric distributor, is president of the organization; Sam Grasinger, of Dallas Gas Co., Electrolux distributor, vice president; and George Beaudoux, of Graybar Electric Co., Kelvinator distributor, secretary-treasurer.

These officers, with Will J. Schnelle, Texas Sales Corp., Norge distributor; E. R. Moon, J. P. Galloway, Inc., Frigidaire distributor; and E. I. Jones, Westinghouse Electric Supply Co., Westinghouse distributor, form an executive committee to draw up a constitution, by-laws, and a code of ethics.

Assisting in the organization of the new group was George H. Rhodine, assistant to the general manager of the Better Business Bureau of Dallas.

Besides the firms mentioned above, the organization's first meeting was attended by David Dunham of D. L. Whittle Co., Williams Ice-O-Matic distributor; B. M. Wadley of Wadley, Inc., Copeland distributor; and J. S. North of Huey & Philip Hardware Co., Mayflower distributor.

CASWELL TO GIVE RANGE TO USER OF OLD STOVE

DETROIT—"New ranges for old" are being offered in a sales promotional scheme by A. E. Truax of Caswell, Inc., General Electric refrigerator and Hotpoint range distributor here.

Detroit newspapers are carrying daily advertisements saying that a new General Electric Hotpoint range will be installed in the home of the owner of the oldest gas range found in use in Detroit. A coupon incorporated in the advertisement asks for the name and address of the person owning the gas stove, the make of stove, and the date of original installation.

Salesmen call on these people, state that they are judges in the contest, and make a personal inspection of the stove. This gives them an opportunity to talk with the owner, who is bound to be a prospect for some kind of new range in the near future.

WESTINGHOUSE DISTRIBUTOR PLANS DRIVE FOR BUSINESS

CANTON, Ohio—Plans for "the largest drive for refrigeration business ever undertaken by the organization" were announced to personnel of the Moock Electric Supply Co., Westinghouse distributor, recently. Details of the campaign will be announced shortly.

H. M. Moock, president and general manager; G. M. Nutter, sales promotion manager; H. M. Comstock, branch manager of Akron, Ohio; W. J. Fritz, branch manager of Youngstown, Ohio; G. E. Ferrell, retail sales manager; J. E. Hugo, Westinghouse district sales promotion manager, Pittsburgh; and Paul Endriss, Westinghouse sales promotion department, Mansfield, Ohio, attended the meeting.

GIBSON REFRIGERATORS SOLD IN 19 COUNTRIES

GREENVILLE, Mich.—Gibson electric refrigerators have now been shipped to 19 foreign countries, according to word from Charles I. Horowitz, of Gibson's export department.

The following countries now receive Gibson shipments: Switzerland, Germany, South Africa, England, Japan, Panama, Philippine Islands, China, Malta, France, Hawaii, Belgium, Norway, Italy, Spain, French West Indies, Portugal, Australia, New Zealand.

WASTED DIRECT-MAIL ADVERTISING STUDIED

WASHINGTON, D. C.—Electrical appliance manufacturers were cited among those supplying large amounts of wasted direct-mail advertising material and other dealer helps to retailers in a study just completed by the Department of Commerce.

The study was of 477 hardware dealers in the Gulf Southwest. They were asked to weigh all "direct-mail advertising material neither read nor saved for reference," and the average dealer reported throwing away four pounds of incoming circulars per week.

Typical stores in towns of less than 50,000 population discarded five pounds a week, and typical neighborhood stores reported only two pounds.

Elimination of Waste

More than 50 of the 477 retailers said that they received supplies of circulars or other dealer helps for lines of goods not carried at all. Such waste, according to the department, could be eliminated almost entirely by use of more carefully compiled lists, or by sending "feeler" letters in advance of shipment of dealer-help material.

The typical store reported receiving more than 20 lbs. of useless sales promotion material in six months, usually consisting of bundles of circulars applying to lines of items not carried, and often imprinted with the dealer's name, thus preventing salvage.

Manufacturers of paint, automobile accessories, radio, sports goods, stoves, washing machines and novelties were other types of organizations which were said to be wasteful in distributing these dealer helps.

Return Post Card

As a remedy for the situation, several merchants suggested that manufacturers and distributors adopt the procedure of enclosing a return post card with the first mailing of any series, declaring that this plan was seldom practiced.

One dealer reported receiving duplicate circulars at his store and home address from two or three concerns which apparently had bought the same mailing list. Another still was receiving mail for a predecessor who had been dead 16 years.

Dealer-help material was favorably received, however, by numerous merchants. A considerable portion, it was reported, used practically all of the advertising matter sent them.

Counter Displays

About one in every five merchants used some of the counter displays and similar devices offered him, but several progressive dealers pointed out that the new type of open-display merchandise removes the need for counter-display devices, most of which were thrown away without even a trial.

Some of the dealers kept window-display sets in reserve by filing them away. Some merchants dislike having their windows dressed in a "campaign," stating that when all dealers' windows are the same, competitive value is lost.

Demonstrations of stoves, washing machines, radios, etc., put on by manufacturers' representatives, were showed to bring good results for stores serving a family trade, although some said that the effectiveness of this method of sales promotion was diminishing.

A system of price tags of neat and attractive appearance was declared by several dealers to be one of the most acceptable helps ever received from a manufacturer.

Stores selling specialty merchandise took advantage of practically every type of dealer cooperation offered, the report showed, including: billboards, direct-mail material, newspaper electrotype, and demonstrations by factory agents.

MOTION AIDS EFFECTIVENESS OF WINDOW DISPLAYS

NEW YORK CITY—Motion in a window display was found to be about nine times as effective as a stationery display in causing passersby to stop and look, in a limited test recently conducted in New York and reported in *Sales Management.*

An educational exhibit without motion drew the attention of 105 people in a test conducted during the noon hour one day, and on the second day, with a small electric train in motion in the same display, 950 persons paused to look.

TWO NEW DISTRIBUTORS FOR BUCKEYE NAMED

MANSFIELD, Ohio—Two new distributors have been appointed for Buckeye refrigerators, according to Ross H. Wilson, sales manager of the refrigeration division, Domestic Industries, Inc.

The distributors are: Radio Electric Service Co., Philadelphia, and Domestic Sales of Peoria, Peoria, Ill.

BUYER'S GUIDE

Manufacturers Specializing in Service to the Refrigeration Industry

SPECIAL ADVERTISING RATE (this column only)—$12.00 per space.
Payment is required monthly in advance to obtain this special low rate.
Minimum Contract for this column—13 insertions in consecutive issues.
All advertisements set in uniform style of type with standard border.
Halftone engravings of 100-line screen, either outline or square finish.
No reverse cuts or heavy black effects. No charge for composition.

Save one man on deliveries. Make heavy lifting easy—quick. Eliminate damage to cabinets—floors—walls.

X-70 REFRIGERATOR TRUCKS
Fit all cabinets, with or without legs, or in the crate. Capacity, 1,200 lbs. All steel frame, 4" rubber tired wheels, one truck with top casters and handles for tilting and rolling into delivery truck and on the stairs. Only pads touch cabinet. Last a lifetime. Complete set $34.50. Ball bearing swivel casters on one end, $5 extra.

X-60 REFRIGERATOR TRUCKS
Handle leg cabinets only. Per set, $31.50. Spring steel hooks to convert into X-70 available separately. Ball bearing swivel casters on one truck, $5 extra.

FINDLAY REFRIGERATOR TRUCKS
For leg cabinets only—padded steel frames—4" rubber tired wheels. Per set, $18.00.

Manufacturers of Trucks for 32 Years

SELF-LIFTING PIANO TRUCK CO.
FINDLAY, OHIO

A big waiting market for
Commercial Refrigeration Equipment

BOTTLE COOLERS

Five Models for Your Commercial Compressor Units. Now is the season to "cash in" on this sure market.

Ask for Catalog "R" and tell us what line of commercial compressors you handle.

S & S PRODUCTS CO. 15 Ree St. LIMA, OHIO
Exclusive Bottle Cooler Manufacturers

We can take care of your entire requirements of

MELCO BRAND

Refrigeration Parts and Supplies

Stocks at
116 Broad St., New York, N.Y. 523 Arch St., Phila., Pa.

Melchior, Armstrong, Dessau Co.

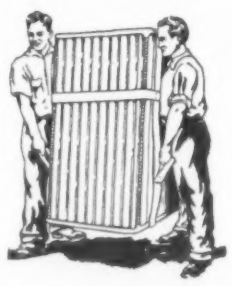
Delivery--Warehousing Service

We are specialists in warehousing, delivering and installing all types of Domestic and Commercial Refrigerators.

Our Warehouse is Fireproof, steam heated and protected by sprinkler system. We have our own Railroad Sidings.

Rates Are Nominal
Correspondence and Inspection Invited

M. & L. CO.
177 Pacific Street, Brooklyn, N. Y.
168 E. 33rd St. New York City 711 E. 139th St.



Specially designed

REFRIGERATOR COVER and CARRYING HARNESS

Form-fitting covers made of canvas outside—moleskin lining inside—with thin felt filling, firmly stitched. Impossible to rip. The "E-Z" Lift web harness eliminates strained backs and delivers the heaviest refrigerator with a minimum of effort. Easy grip.

Web Harness—$7.00 Complete
Covers—$8.00, $10.00 and $12.00

America's largest pad manufacturers

NEW HAVEN QUILT & PAD CO.
80-86 Franklin St., New Haven, Conn.

TO THE CANADIAN TRADE

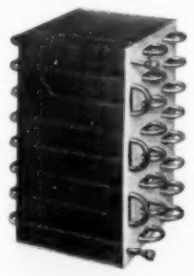
You can get quicker delivery at lower cost by ordering from us

We carry in Stock

COMPRESSORS—COMPRESSOR UNITS—NON-FROSTING COMMERCIAL COILS—BOILER TYPE COILS—COPPER TUBING—FLARE AND SOLDERING FITTINGS—THERMOSTAT AND PRESSURE CONTROLS—DEHYDRATED OIL—AND MANY OTHER PARTS.

THE ARCTIC ICE & FUEL CO., LIMITED
Winnipeg, Man.

A NEW FIN COIL *by* PEERLESS



Wedge-Locked and Edge-Locked Aluminum Fins on Tinned Copper Tubing—
Absolute Metal to Metal Contact.
A Superior Coil in which Soldered Return Bends have been eliminated.
Priced to meet 1932 conditions.
Write—Wire for Catalog.

PEERLESS ICE MACHINE CO., 515 W. 35th St., Chicago, Ill.

REQUESTS FOR INFORMATION

Please refer to the 1932 Refrigeration Directory and Market Data Book for a complete list of all manufacturers of refrigeration equipment, parts, materials, supplies and accessories; also for all available statistical data on sales of refrigeration equipment, distribution methods, etc.

To obtain a copy of this book send $2.00 to Business News Pub. Co., 550 Maccabees Bldg., Detroit, Mich.

Advertisers will be given preference in published answers to requests for buyer's guide service, but a complete list of all known suppliers will be mailed if stamped, self-addressed envelope is enclosed with inquiry.

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Ethyl Chloride, Gas Masks

Query No. 828—"Kindly advise us the names of several companies who sell a good grade of ethyl chloride for electric refrigerators. Also advise who manufactures gas masks for use of service men working on sulphur dioxide machines."

Answer—A complete list of manufacturers of ethyl chloride can be found on page 286 of the 1932 Refrigeration Directory and Market Data Book; a list of gas mask manufacturers on page 344 of the same volume.

Oil-Burning Refrigerators

Query No. 829—"We are receiving inquiries from members of our association for sources of supply for oil-burning refrigerators. No information in our files reveals a manufacturer of such a product except the Perfection Stove Co. Can you give us additional information?"

Query No. 830—"Will you please forward to me the names of manufacturers of an oil or gas-burning refrigerator, such as the Perfection Stove Co., if there are others."

Answer—The Electrolux refrigerator, manufactured by Electrolux Refrigerator Sales, Inc., Evansville, Ind., may also be adapted for operation by oil fuel. Montgomery Ward & Co. is merchandising the Trukold oil-burning refrigerator.

Lights for Cabinets

Query No. 831—"We are writing to inquire if you could put us in touch with any manufacturer who could supply us with automatic electric lights for refrigerator cabinets."

Answer—Write Arrow, Hart & Hegeman Electric Co., Hartford, Conn.

Coldrink Cooler Valves

Query No. 832—"We would like to ask that you give us the name of the company making the valve on the Coldrink water cooler, and also the price of this valve. This Coldrink water cooler is manufactured by Hamburg Brothers, Pittsburgh. We should also like to know who makes the valve used by the Federal Enameling & Stamping Co. of Pittsburgh on a similar water cooler."

Holmes Refrigerant

Query No. 833—"Can you tell me where the gas for the Holmes electric refrigerator can be obtained, and what equipment is necessary for charging same?"

Answer—The refrigerant used in the Holmes electric refrigerator consisted of 1.9 lbs. of ethyl chloride. A complete list of manufacturers of this refrigerant may be found on page 286 of the 1932 Refrigeration Directory and Market Data Book. We have no information about the charging equipment necessary for this machine.

Rubber Gaskets

Query No. 834—"Could you advise us where we might obtain a pneumatic rubber gasket material such as Norge and Frigidaire use around the doors of their refrigerators?"

Answer—A complete list of gasket suppliers may be found on page 206 of the 1932 Refrigeration Directory and Market Data Book.

Beverage Vending Machines

Query No. 835—"I am interested in purchasing several coin-operated soft drink vending machines, electrically refrigerated, similar in construction to the electrically operated water coolers. I understand that you might be able to supply me with a list of manufacturers."

Answer—A complete list of beverage vending machine manufacturers may be found on page 381 of the 1932 Refrigeration Directory and Market Data Book.

Five Per Cent Tax

Query No. 836—"We should like to know if show cases to be used with electric refrigeration come under the 5 per cent tax."

Answer—The new government tax does not apply to commercial equipment such as display cases.

Cooke Steel Rings

Query No. 837—"We are looking for the manufacturer of the Cooke Steel Ring. Will you please give us the correct address?"

Answer—You probably refer to the Cooke Seal Ring Co., whose business is now being conducted by the Rotary Seal Co., 809 W. Madison Ave., Chicago.

Bellows Seals

Query No. 838—"Will you kindly advise us the names and addresses of some manufacturers of bellows seals for compressors?"

Answer—A list of manufacturers of such seals will be found on page 216 of the 1932 Refrigeration Directory and Market Data Book.

Refrigerator Defrosting Pans

Query No. 839—"We would like a list of the manufacturers of defrosting pans for mechanical refrigerators. We want the names of those making glass, vitreous enamel, and baked paint enamel trays."

Answer—Manufacturers of these pans may be found on page 204 of the 1932 Refrigeration Directory and Market Data Book.

Klenzair Cooler

Query No. 840—"Can you give me the manufacturer of the little unit called 'Klenzair'?"

Answer—The "Klenzair" portable air conditioning fan is manufactured by Swartzbaugh Mfg. Co., 1336 W. Bancroft St., Toledo.

Frigidaire Parts and Supplies

Query No. 841—"Where can we purchase replacement parts and supplies for Frigidaire machines? We have tried to obtain such parts from both the factory and distributor, but without success."

Answer—A list of companies specializing in replacement parts and supplies for various refrigerators may be found on page 341 of the 1932 Refrigeration Directory and Market Data Book.

Ice and Solid CO_2 Handling Equipment

Query No. 842—"I am interested in obtaining catalogues, price lists, and detailed specifications of ice crushers, ice saws, ice shavers, ice scoring and cubing machines; also block ice and crushed ice elevators and conveyors. I am also anxious to obtain catalogues, price lists and detailed specifications regarding machines for handling, crushing, grinding, and sawing solid CO_2, and should be grateful for any information of this nature." (British consul.)

Watts Pressure Reducing Valve

Query No. 843—"We are trying to locate the manufacturer of the Watts pressure reducing valve, and would also like to know who makes the Standard freezing and cooling unit."

Answer—The Watts valve is made by Watts Regulator Co., 256 Lowell St., Lawrence, Mass., and the "Standard freezing and cooling units in coils" are probably the Fedders evaporators sold by F. B. Riley & Associates, 329 Beaubien St., Detroit, under the name of "Standard Refrigerating Appliances." Mr. Riley has discontinued selling this line, but it may be had from Fedders Mfg. Co., 57 Tonawanda St., Buffalo, or Fedders representatives in various cities.

Oil Burners

Query No. 844—"Can you furnish me a list of all the manufacturers of oil burners for domestic heaters, manufacturers of bottled-gas pressure regulators of the mercury type, and of steel cabinets for housing cylinders?"

Answer—A list of oil burner manufacturers may be found on page 250 of the 1932 Refrigeration Directory and Market Data Book; we have no list of manufacturers of bottled-gas pressure regulators, or of steel cabinets for housing cylinders.

Truck Refrigerating Equipment

Query No. 845—"May we have information with reference to portable electric refrigeration units for Ford truck equipment?"

Answer—A complete list of refrigerated truck manufacturers and refrigeration systems for such trucks may be found on page 369 of the 1932 Refrigeration Directory and Market Data Book.

Twin Cylinder Compressors

Query No. 846—"Would you please give us the name and address of the manufacturers who are now building a small twin cylinder compressor suitable for household refrigeration?"

Answer—A complete list of compressor manufacturers may be found in the 1932 Refrigeration Directory and Market Data Book.

THE CONDENSER

PAYMENT IN ADVANCE is required for advertising in this column. The following rates apply:

POSITIONS WANTED—Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each. ALL OTHER CLASSIFICATIONS—Fifty words or less, one insertion $3.00, additional words six cents each. Three insertions $8.00, additional words sixteen cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Building, Detroit, Mich.

POSITIONS AVAILABLE

SALESMEN WANTED; several desirable territories open for dealer contact. Direct factory connection with electric refrigerator manufacturer. Box 478.

SALES Representatives calling on electric refrigerator dealers—experienced in commercial evaporators preferred. Attractive commission proposition on quality line of evaporators. Also representation to manufacturers on condensers and evaporators. Reply Box 477, care Electric Refrigeration News.

POSITIONS WANTED

HIGH GRADE refrigeration man now employed wants connection with manufacturer who desires the services of eight years' experience in refrigeration selling: Door-to-door selling, 1 year; sales supervisor, 1½ years; sales instructor, 1 year; retail sales manager, 2 years; wholesale territory manager, 2 years. Can furnish A-1 references. Box 479.

WANT PUBLICITY? What it takes to get it, I've got! Behind me: Eleven years' experience in newspaper, electric refrigeration, radio fields that's hard to beat! Ahead of me: A connection with a manufacturer wanting effectively to tell the world about his products. Are you that manufacturer? Box 472.

EQUIPMENT FOR SALE

FOR SALE—Several hundred high-class electric cabinets suitable for multiple installation to "close out" at a real bargain. Belding Hall Co., Belding, Michigan.

Subscribe Now and Save Money

Special Offers

Note—Combination rates are for United States only.

COMBINATION OFFER No 1
Electric Refrigeration News 1 Year
and
Directory and Market Data Book
Combination Price $4.00. Saves You $1.00

COMBINATION OFFER No. 2
Electric Refrigeration News 2 Years
and
Directory and Market Data Book
Combination Price $6.00. Saves You $2.00

COMBINATION OFFER No. 3
Refrigerated Food News 1 Year
and
Directory and Market Data Book
Combination Price $2.00. Saves You $1.00

COMBINATION OFFER No. 4
Refrigerated Food News 1 Year
and
Electric Refrigeration News 1 Year
Combination Price $3.50. Saves You $.50

COMBINATION OFFER No. 5
Directory and Market Data Book
and
Electric Refrigeration News 1 Year
and
Refrigerated Food News 1 Year
Combination Price $4.50. Saves You $1.50

COMBINATION OFFER No. 6
Directory and Market Data Book
and
Electric Refrigeration News 17 Weeks
Combination Price $2.00. Saves You $1.00

Group and Foreign Rates

UNITED STATES and Possessions and Pan-American Postal Union Countries.

	Electric Refrigeration News	Refrigerated Food News	Both Papers
1 subscription	$3.00	$1.00	$3.50
5 or more, each	2.75	.95	3.25
10 or more, each	2.50	.90	3.00
20 or more, each	2.25	.85	2.75
50 or more, each	2.00	.80	2.50
CANADA (Prices include tariff charge of 5c a copy)			
1 subscription	$6.00	$2.00	$7.00
5 or more, each	5.75	1.95	6.75
10 or more, each	5.50	1.90	6.50
20 or more, each	5.25	1.85	6.25
50 or more, each	5.00	1.80	6.00
ALL OTHER COUNTRIES			
1 subscription	$4.00	$1.50	$5.00
5 or more, each	3.75	1.45	4.75
10 or more, each	3.50	1.40	4.50
20 or more, each	3.25	1.35	4.25
50 or more, each	3.00	1.30	4.00

1932 REFRIGERATION DIRECTORY AND MARKET DATA BOOK
In United States, $2.00 a copy, postpaid.
In all other countries, $2.50, postpaid.

BUSINESS NEWS PUBLISHING CO., ...1932
550 Maccabees Bldg., Detroit, Mich.

☐ Enclosed is remittance for $.....
☐ Please enter my order for COMBINATION OFFER NO.....at $.....
☐ Enter subscription to Electric Refrigeration News ☐ 1 Yr. $3.00. ☐ 2 Yrs. $5.00.
☐ Enter subscription to Refrigerated Food News ☐ 1 Yr. $1.00. ☐ 2 Yrs. $1.50.
☐ Send 1932 Refrigeration Directory and Market Data Book. $2.00 per copy.

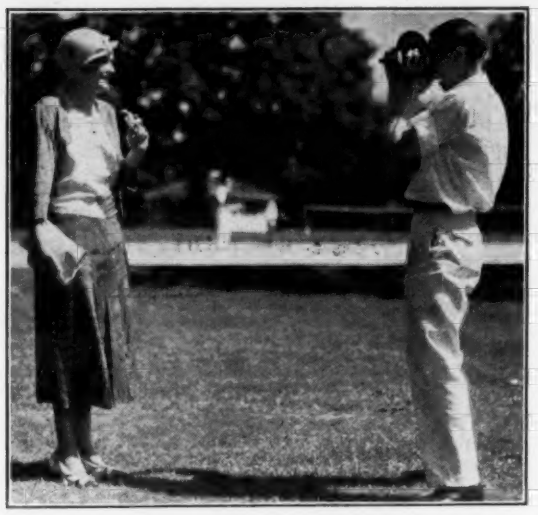
Name .....

Address .....

City ..... State.....

6-29-32

General Electric Employes Frolic at Second Annual Picnic



"Bubbles" looks at the birdie.

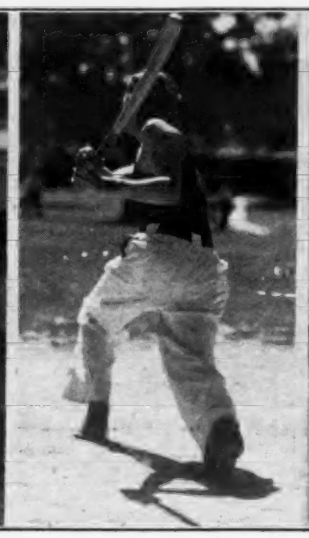
Somebody in the G. E. organization knows how to pick 'em.

Landmesser tells it to Sweeney.

Southpaw form.

Pee-wee golf.

Gamboling on the greensward, featuring "Mike" Mahony.



Trouble for the outfield.

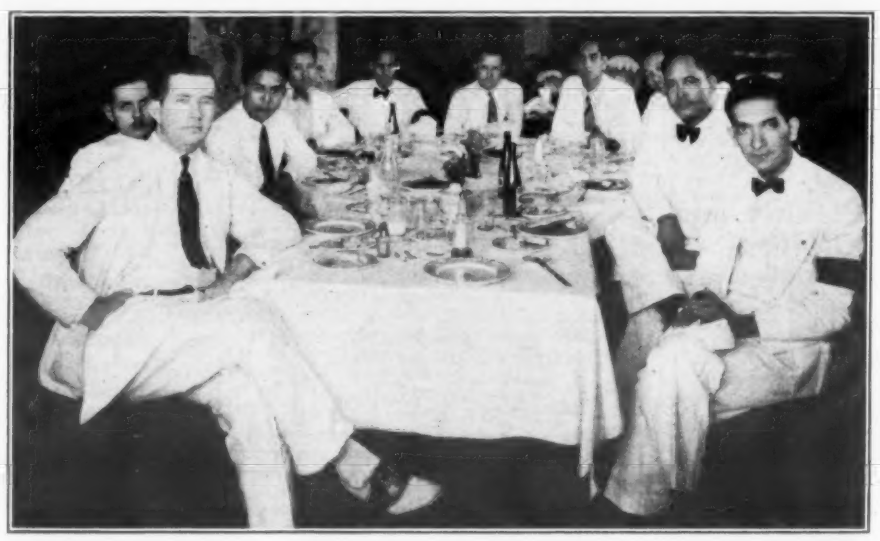
Well, anyway, it was a great day!

Many a "charley horse" followed this relay race.

Perfect diving form—or perhaps just "perfect form."

The inevitable tug of war.

Alice White gets a cold drink from Ray M. Smith of the Rochester Copeland distributorship.



The Frigidaire sales organization in Manila, P. I., winds up a 10-day sales contest with a banquet.

Jean Chatburn, Los Angeles' "Miss Personality," and an Eskimo princess greet a Norge trainload.

A week after the first houses in the Old Mill Basin settlement in Brooklyn had been wired for electricity, a G. E. was installed in a home there.

G. B. Riddle joins Gibson's forces.

Members of the sales organization of the Georgia Electric Appliance Corp., of Atlanta, new state distributor for Westinghouse refrigerators, pose.

SPECIFICATIONS ISSUE
16,500 COPIES

Engineering Section

IN TWO PARTS
PART TWO

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office

The business newspaper of the refrigeration industry

VOL. 6, NO. 43, SERIAL NO. 171

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Business News Pub. Co.

DETROIT, MICHIGAN, JUNE 29, 1932

Entered as second-class matter
Aug. 1, 1927, at Detroit, Mich.

THREE DOLLARS PER YEAR

½-H.P. HERMETIC UNIT IS DESIGNED BY WESTINGHOUSE

Commercial Models Use New 4-Cylinder Compressor

MANSFIELD, Ohio—A four-cylinder, hermetically-sealed compressor, powered by a ½-hp. motor, has recently been added to the Westinghouse line of refrigerating units, to furnish the refrigeration for the new Westinghouse commercial line which includes storage cabinets, milk coolers, biological cabinets, and an ice maker.

The compressor has a 1-in. bore, ⅞-in. stroke. The drive is direct connected, counter balanced eccentric.

The Westinghouse double-radiator fin type condenser, with forced draft by a motor driven fan, is used. The condenser and fan are placed on a panel directly above the sealed-in mechanism.

Rated at 23.3 I.M.E. Per Hour

The new AS-50 unit has an ice melting effect of 23.3 lbs. per hour, operating on 5 lbs. back pressure, with 80° air passing over the condenser.

Sixteen different models of commercial refrigerators are being offered, all with dual-automatic control. Eleven of these models are finished in porcelain throughout, while five models are available with porcelain fronts, lacquer sides, and galvanized steel liners.

The new Westinghouse storage cabinets come in three sizes, 66.7, 42.7, and 26.6 net cu. ft. food storage capacity, respectively. Glass doors are featured on six models, while four models have the full-length meat doors.

Insulation is 3 in. cork throughout. Shelves are straight wire, tinned. Chrome plated brass hardware is used on all models. All the porcelain models have electric lights and adjustable shelves.

Aluminum Fin Cooling Coils

The cooling coils have aluminum fins, 2¾x2¾ in. on ⅝ in. tinned copper tubing. Overhead coil compartment is 75 in. wide, 21⅝ in. deep, and 10¾ in. high.

The biological cabinets are offered as facilities for storaging perishable biological products, serums, vaccines, and the like, at temperatures below 50° F. The cabinets are equipped with two and four-drawer units, to fit any Westinghouse refrigerator. They are particularly adapted for use in models A-1 or AP-45 and A-1 or AP-73.

Drawers and frames are stainless steel except for the name plates and drawer pulls which are chromium plated brass. A special stopping device prevents the drawers from falling when pulled out. Perforated walls and bottoms allow circulation of the cold air for maintenance of even temperatures.

The new Westinghouse model AP-64

(Concluded on Page 4, Column 3)

LOUIS H. ROLLER TO HEAD NEW YORK A.S.R.E. SECTION

NEW YORK CITY—Louis H. Roller of Brunswick-Kroeschell Co., New Brunswick, N. J., has been elected president of the New York section of the American Society of Refrigerating Engineers to hold office for the year beginning June 1.

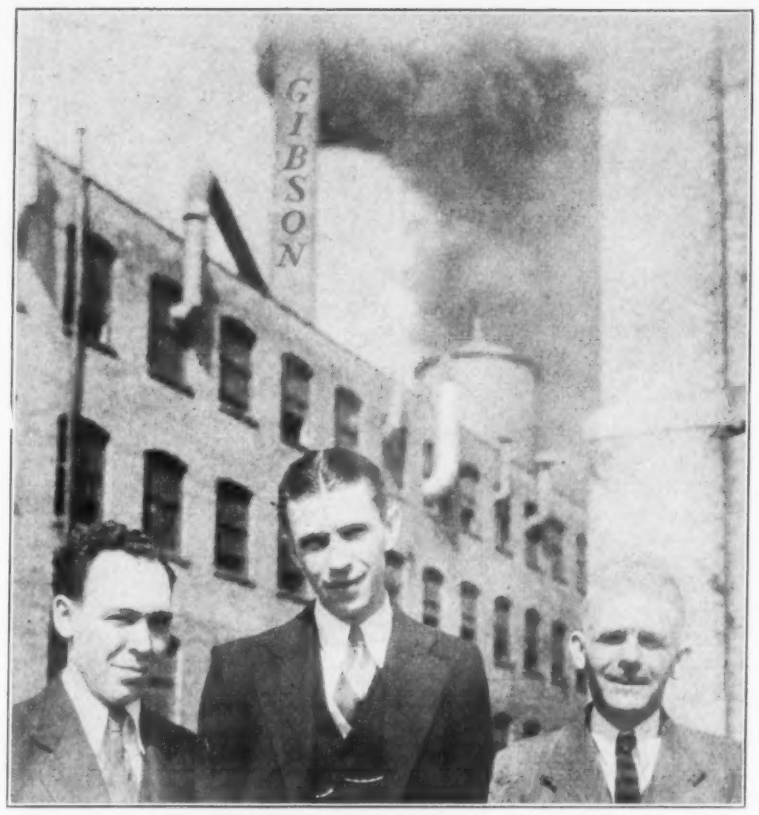
Ira E. McFarland, Jamison Cold Storage Door Co., New York City, was elected first vice president. Other officers are: Eustace C. Soares, R. & B. Engineering Corp., New York, second vice president; Clifford F. Holske, Knickerbocker Ice Co., New York City, secretary; and Chester J. Conn, Long Island Ice Corp., Long Island, N. Y., treasurer.

All the officers were elected for one-year terms except Mr. Soares, who will serve for two years.

PURDUE GIVES S. M. KINTNER HONORARY DEGREE

EAST PITTSBURGH, Pa.—Samuel M. Kintner, vice president and director of research, Westinghouse Electric & Mfg. Co., received the honorary degree of doctor of engineering from Purdue University, Lafayette, Ind., at the Commencement exercises held June 4.

Porthos, Athos, and Aramis



New Gibson engineers at the Greenville (Mich.) plant are Paul Schell from G-E, H. F. Powell from Frigidaire, and J. M. Johann from Majestic.

* * *

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NEW CAPACITOR MOTORS ANNOUNCED BY BALDOR

(See Picture on Page 5)

ST. LOUIS—Designing engineers of the Baldor Electric Co. here, have just announced the development of high torque capacitor motors for refrigerators, oil burners, and other household applications.

The announcement claims high starting torque, freedom from radio interference, and smooth starting.

The motor is mounted on a spring cushion base to absorb noise and vibration. The condenser is mounted on the motor top, and all electrical connections are made at the factory.

Sleeve bearings machined out of solid phosphor bronze stock are used, while housings are wool packed and intended to retain sufficient oil for one year's operation.

3 More Engineers Join Gibson Staff

GREENVILLE, Mich.—Like the three musketeers, three engineers from different parts of the country have joined together and cast their lot with the Gibson Electric Refrigerator Corp. here.

They are Herschel F. Powell, formerly of the Frigidaire Research Laboratories in Dayton; Paul Schell, who comes from General Electric Research Laboratories; and J. M. Johann, formerly of the Frigidaire Laboratories and more recently with Majestic. Mr. Johann will be in charge of the factory service shop for the Gibson company.

All three are moving to Greenville, Mich.; Mr. Powell from Dayton, Mr. Schell from Ft. Wayne, Ind., and Mr. Johann from Chicago.

"Our laboratories have been working overtime," said R. T. Smith, chief engineer of the Gibson Corp., in explanation of the expansion in personnel.

No Discomfort in G. M. Johnston's Office With Automatic Air Conditioning

By John T. Schaefer

DETROIT—Installed several weeks ago in the private office of G. M. Johnston, president of Universal Cooler Corp., is an air conditioning system which is cooling the atmosphere this summer much to the satisfaction of Mr. Johnston and his office visitors.

An air conditioned office is not entirely new to the Universal Cooler executive. About this time last year an air cooling plant was provided in Mr. Johnston's office at the old Universal works.

In his office in the new factory, Universal engineers have installed a system with the added features of complete automatic control and independent humidity regulation so that air conditions can be tempered to a finer degree even in the spring and fall months when humidity correction is a principal requirement.

Except for a slight humming sound which is perceptible only when your attention is directed to the air conditioner, the only evidence of the system is the sensation of comfort. Both entrance and return grilles for the conditioned air are inconspicuous, built flush with the wall.

The system is practically identical with that which Universal Cooler has been building for the Conditioned Air Corp., and installing with Universal refrigerating equipment.

A 10° differential is maintained in Mr. Johnston's office between inside and outside temperatures; relative humidities are kept within a range of 55 to 58 per cent.

Adjoining the office is a small closet in which is installed the air conditioning cabinet, 37 in. high, 25½ in. wide, and 60¾ in. long overall. The cabinet contains a 1/6-hp., 1,140 r.p.m. motor driving a Sirocco fan at each end of the shaft; a direct expansion cooling coil, water sprays, a heating coil for winter use, and a spun-glass filter.

The blower draws air from the office through a duct near the floor, forces it through the water spray chamber (which may or may not be operating according to dictates of the Humidistat), across the cooling coil, through the cleaning filter, and through a duct leading to the discharge grille near the ceiling in the office. A fresh air duct from the roof of the building supplies new air to the extent of 20 per cent of the total circulation.

A 2-in. thickness of hair felt was placed in the duct for a distance of 30 in. to keep noise and vibration of the air conditioner from entering the office, William Higham, Universal air conditioning engineer explains.

The Flintlock brass cooling coil, with 25x22 in. frontal area, is four rows deep, and has sufficient capacity to cool the air with an evaporator temperature of 41° F., so that no freezing is possible under conditions when the machine adds

(Concluded on Page 4, Column 3)

Specialty Dealers To Sell Carrier Coolers

Engineers Explain New Plan to Refrigeration Distributors at Newark Meeting

By John T. Schaefer

NEWARK. N. J., June 27.—(By Special Wire to ELECTRIC REFRIGERATION NEWS)—Certain types of air conditioning equipment have now been developed to the point where they can be sold by specialty merchandising outlets, engineers of the Carrier Corp. showed here this afternoon before a group of radio and refrigeration distributors. Up until this time air conditioning has been primarily an engineering business and some phases of it will always require individual engineering for each installation, but the portable room cooler and Carrier's atmosphere cabinet are two that are now suited to widespread merchandising effort, it was announced.

Members of the National Association of Radio, Refrigeration and Electrical Distributors were the invited guests of the Carrier companies for today's sessions.

The first meeting was held in the model store in which the steam ejector system has been installed to demonstrate its operation for air conditioning retail establishments.

Thornton Lewis, executive vice president, called the meeting to order, gave a thumbnail sketch of the Carrier organization, and introduced H. P. Gant, president of the Carrier-York division.

Mr. Gant spoke very briefly showing that air conditioning is closely allied to commercial refrigeration which is handled by some of the visitors present.

Donald French, executive vice president of the Carrier Research Corp., spoke next, giving a two-fold definition of air conditioning: first knowing what weather is best for human beings, and second knowing how to produce it indoors regardless of outdoor weather conditions.

For equipment to be called air conditioning, he said, it should accomplish all functions of temperature control, humidity control, air motion, cleaning, and ventilation. Several Carrier products do only one or two of these operations, he

(Concluded on Page 4, Column 4)

UNION PACIFIC AND I.C. TO CONDITION TRAINS

OMAHA—Announcement has been made from Union Pacific headquarters in Omaha that by the time hot weather hits this season, all dining cars used on either the San Francisco Overland or the Los Angeles Limited will be fitted with air conditioning systems. Not only will all regular diners on these trains be fully equipped, but enough extras also that will make it possible to have this service daily.

Two systems will be used. The first is the Pullman system in which the axles of the dining cars are geared for driving a propellor shaft, fitted with a magnetic clutch attached to the compressor.

The second system is the Carrier system. Steam from the locomotive travels through the regular steam line to the dining cars, where it is passed into a jet, producing a vacuum in a tank. The vacuum causes the water to evaporate and cool, the cooled water passing into air cooling coils.

The dining cars will be made soundproof, and all windows sealed so neither sound nor dust will enter the cars.

ILLINOIS CENTRAL CARS

CHICAGO—All cars on Illinois Central trains between Chicago and St. Louis will be air-cooled, according to newspaper advertisements appearing last week. Installation of the air conditioning equipment began June 25.

"The Daylight," Illinois Central's day train from Chicago to St. Louis, will be air conditioned, and two companion trains, the "Michigan Boulevard," afternoon train, and "The Diamond," night train, will be pre-cooled.

BIG FILM MANUFACTURER TO USE AIR CONDITIONING

YORK, Pa.—The Consolidated Film Industries, Inc., New York City, a large film developing and printing organization, recently purchased a complete 225-ton refrigerating plant for its Fort Lee, N. J., plant from the York Ice Machinery Corp. here.

The refrigerating equipment will cool the water used in air conditioning systems for 20 film-drying cabinets with a total capacity of 2,000 ft. of film per minute. Water will also be cooled and circulated through a cooling coil in the developing tanks where it is desired to maintain temperatures very accurately within plus or minus ½° F.

Of the total refrigerating capacity installed, approximately 150 tons is to be used for air conditioning in the film-drying cabinets, 11 tons for developer cooling, while the balance to total 225 tons, is to be used in cooling water for washing the films.

With the application of refrigeration to the film-drying process, films can be run through the drying systems at approximately 70 per cent increased speed, the Consolidated Film operators report.

FADA PLANS INCREASE IN FACTORY EMPLOYES

LONG ISLAND CITY, N. Y.—The addition of 200 men to the payroll of the Fada Radio and Electric Corp. was announced last week by Frank A. D. Andrea, president of the corporation.

Between 1,200 and 1,500 workmen may be added to the Fada payroll by fall, according to Mr. Andrea.

AMERICAN RADIATOR OPENS BUFFALO PLANT

BUFFALO, June 28.—The American Radiator Co. today reopened its plant here after a shutdown of more than two months, recalling more than 250 employes.

Trukold, Norge, Keokuk and Zerozone Specifications

Trukold
MONTGOMERY WARD CO.
Chicago, Ill.

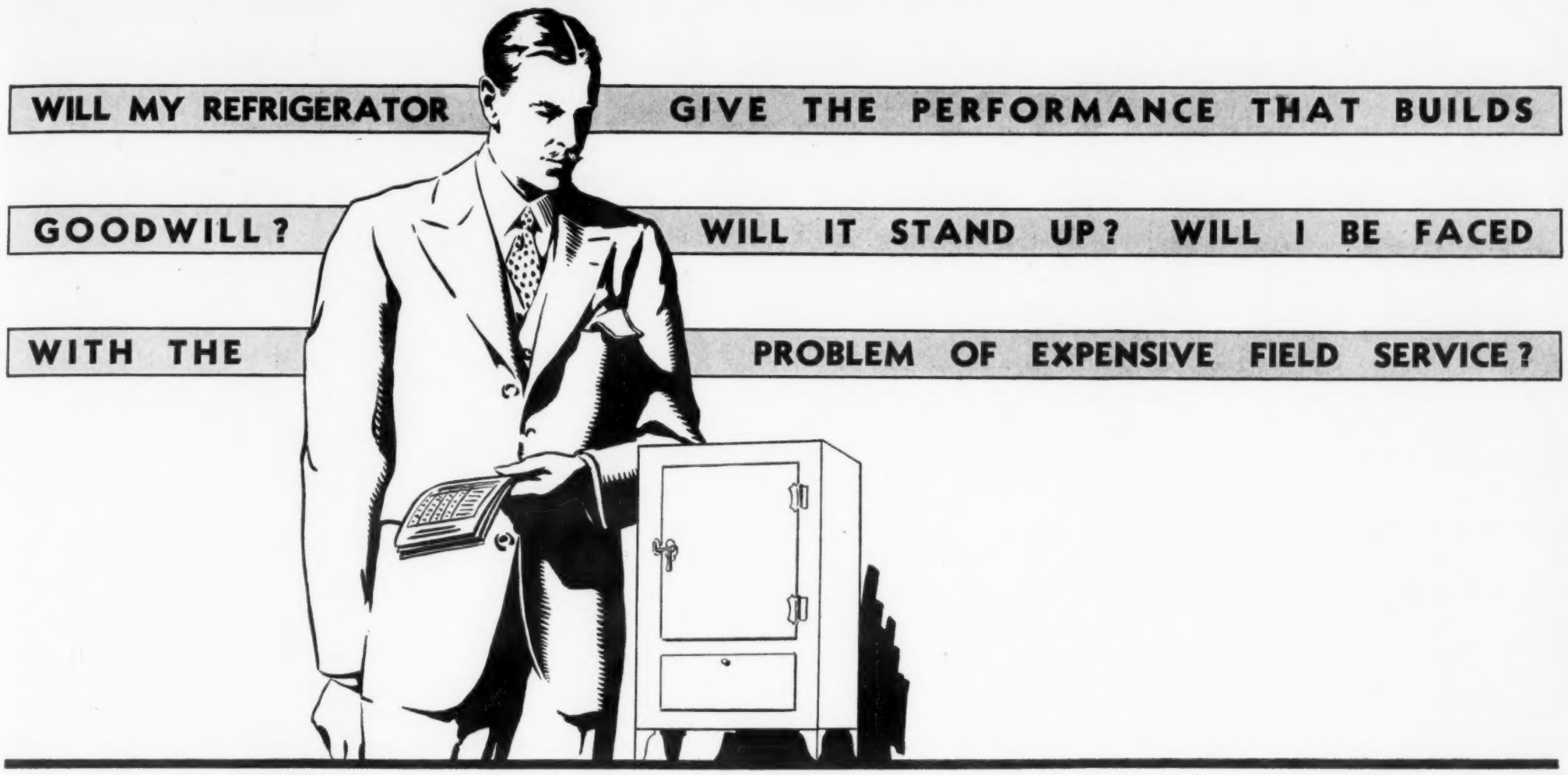
Norge
NORGE CORP.
Detroit, Mich.

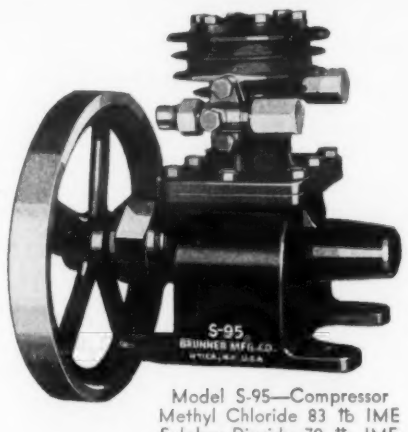
Keokuk
KEOKUK REFRIGERATING CO.
Keokuk, Iowa

Zerozone
ZEROZONE, INCORPORATED
939 E. 95th St., Chicago, Ill

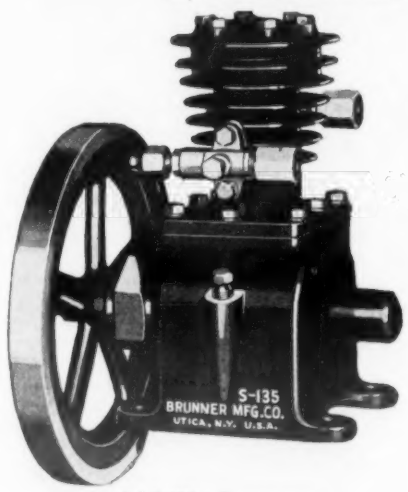
Model or Catalog No.	Trukold LW-30	Trukold LW-40 / LW-55	Trukold LW-75 / PW-40	Trukold PW-55 / PW-75	Norge A	Norge B	Norge BP	Norge D	Norge DP	Norge F	Norge H
CABINET SPECIFICATIONS											
Overall dimensions, including hardware											
Height (inches)	45	52¼	55	57⅜	51¾	53¼	53¼	61¾	61¾	62⅞	68¼
Width (inches)	23⅞	23⅞	28⅛	34⅛	25⅛	25¼	25¼	28⅞	28⅞	32⅞	42¼
Depth (inches)	27⅝	27⅝	27⅝	28⅝	23⅞	24¼	24¼	25¼	25¼	27¼	27¼
Thickness of insulation											
Top of cabinet (inches)	2	2	2	2	2	2	2	3	3	3	3
Sides of cabinet (inches)	3	3	3	3½	3	3	3	3	3	3	3
Bottom of cabinet (inches)	3½	3½	3½	3½	3½	3	3	2½	3	2	3
Inside dimensions of cabinet liner											
Height (inches)	20	27¼	30	32⅜	27¼	30	32⅜	26⅞	26⅞	31¼	36
Width (inches)	17⅝	17⅝	21⅝	26⅝	17⅝	21⅝	26⅝	20	20	24⅝	34
Depth (inches)	17	17	17	17	17	17	17	16⅝	16⅝	18	18
Thickness of exterior metal (gauge)	20	20	20	20	20	20	20				
Thickness of interior metal (gauge)	19	19	19	19	19	19	19				
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	2
STORAGE CAPACITY											
Gross food storage capacity (cu. ft.)	3.5	4.80	6.57	8.72	4.8	6.57	8.72	5.34	5.34	5.34	6.88	6.88	8.08	12.83
Net food storage (cu. ft.) (Nema rating)	3.0	4.19	5.78	7.85	4.19	5.78	7.85	4.25	4.25	4.25	5.6	5.6	6.8	11.1
Number of shelves	2	3	4	4	3	4	4							
Total shelf area (sq. ft.) (Nema rating)	6.3	7.38	9.38	14.08	7.38	9.38	14.08	9.2	9.6	9.6	12.3	12.3	14.3	20.95
Greatest distance between any two shelves	14	14⅝	13⅞	14½	14⅝	13⅞	14½							
Shortest distance between any two shelves	6½	6½	6	6½	6½	6	6½							
ICE CUBE TRAYS											
Number of ice cube trays	2	3	5	6	3	5	6	3	3	3	5	5	5	8
Inside dimensions of trays (inches)											
Length (at top of tray)	10¼	10¼	10¼	10¼	10¼	10¼	10¼							
Width (at top of tray)	3¾	3¾	3¾	3¾	3¾	3¾	3¾							
Depth	1¼	1¼	1¼	1¼	1¼	1¼	1¼							
Number of cubes produced at one freezing	42	63	105	126	63	105	126	63	63	63	105	105	105	168
Weight of ice cubes produced (lbs.)	2½	3¾	6¼	7½	3¾	6¼	7½	5.4	5.4	5.4	9.0	9.0	9.0	14.4
COMPRESSOR SPECIFICATIONS											
Bore (inches)	1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	1.0625							
Stroke (inches)	.6875	.6875	.6875	.6875	.6875	.6875	.6875							
Standard speed (rpm)	1730	1730	1730	1730	1730	1730	1730							
Number of cylinders	2	2	2	2	2	2	2							
Compressor capacity (lbs.) (ASRE rating)	61	61	61	61	61	61	61							
Motor size (hp.)	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-4
Standard motor speed (rpm)	1745	1745	1745	1745	1745	1745	1745	1750	1750	1750	1750	1750	1750	1750
Quantity of refrigerant in system (lbs.)	25 oz.	25 oz.	25 oz.	25 oz.	25 oz.	25 oz.	25 oz.	5	5	5	5	5	5	...
Quantity of lubricant in system	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.							
WEIGHT											
Net weight of complete refrigerator (lbs.)											
Total shipping weight (lbs.)	315	366	409	487	366	409	487	345	356	377	445	462	537	767
PRICE											
F. o. b. factory price											
Retail price, without installation	$134.50	139.50	169.50	199.50	154.50	187.00	219.50							
Installed price	$134.50	139.50	169.50	199.50	154.50	187.00	219.50							
CABINET MATERIALS											
Make of cabinet	Gibson				Norge						
Material used for exterior	Metal				Steel						
Make of exterior metal	Lacquer—auto body steel; porcelain—Armco										
Material used for frame	Steel				Wood						
Make of interior metal	Armco										
Finish of shelves	Tinned				Model H—porcelain; all others—tinned						
INSULATION											
Make of insulation	Balsam Wool										
Nature of insulating material	Vegetable				Vegetable						
Bulk or formed slabs	Formed slabs				Formed slabs						
How is insulation waterproofed	Hydrolened paper										
Make of waterproofing material	Hydrolene										
FINISH											
Cabinet finish (exterior)	LW models—lacquer; PW models—Porcelain				A, B and D models—lacquer; all others—porcelain						
Make of exterior finish	Lacquer—Bradley-Vrooman; Porcelain—Ferro										
Colors offered as standard	White				White						
Colors offered on special order	None				None						
Cabinet finish (interior)	Porcelain				Porcelain						
Make of interior finish	Ferro										
HARDWARE											
Make of hardware	Grand Rapids Brass										
Process of manufacture	Stamped				Stamped and cast						
Basic metal of hardware	Brass				Brass						
Finish of hardware	Chromium				Chromium						
DOORS											
Material used for breaker strip	Wood				Wood						
Material used for gasket	Rubberized fabric				Live rubber						
Make or brand of gasket	Backstay Welt										
EVAPORATOR											
Make of evaporator	Gibson										
Evaporator construction	Tubular				Tubular						
Metal used for evaporator	Brass and copper				Copper						
Type of refrigerant control	Expansion valve										
Make of expansion valve	American Radiator										
Make of brine tank	None				None						
Solution used for brine	None				None						
Type and make of trays	Aluminum										
Dimensions of ice cube (inches)	1-3/16x1-1/4x1-7/16										
SPECIAL FEATURES					Hydrovoir Watervoir Preservoir BP, DP,F and H models—Icevoir						
COMPRESSOR											
Make of compressor	Trukold				Norge Rollator						
Type of system	Conventional				Conventional						
Type of compressor	Reciprocating				Rotary						
Compressor drive	Direct				Belt						
Type and make of shaft seal	Bellows				Bellows						
Location of compressor	Above				Below						
CONDENSER											
Make of condenser	Bush or McCord										
Fan or natural draft cooling	Fan				Fan						
Type of condenser	Finned tube				Finned tube						
REFRIGERANT											
Refrigerant used	Sulphur Dioxide				Sulphur Dioxide						
Trade name											
Chemical formula	SO_2				SO_2						
LUBRICATION											
Make of compressor lubricant	Sunisco										
How often should motor be oiled	Semi-annually										
MOTOR											
Make of motor	Delco										
Type of motor	Repulsion-Induction				Condenser						
Method of starting	Direct				Direct						
How adapted to odd frequency	Change motor				Change motor						
What additional cost is entailed	50 cycle—$2; 25 cycle—$10										
How adapted to direct current	Change motor				Change motor						
What additional cost is entailed	$4.00										
Type of wire or cable used	S. J. No. 16 rubber covered cable										
Make of wire or cable used											
CONTROL											
Make of control	Ranco										
Type of control	Temperature				Temperature						
Temperature regulation method	Manual regulator										
Make of overload cut-out	Ranco										
How is defrosting accomplished	Semi-automatic				Shut down unit						
POLICY											
Who determines retail price	Factory				Distributor						
Guarantee period on cabinet	Three years				Lacquer—one year; porcelain—two years						
Guarantee period on system	Three years				Two years						
By whom serviced	Distributor and factory										
Are replacement parts sold to independent service companies	No										

Model or Catalog No.	Keokuk LT-4	LT-6	LT-8	PT-6	PT-8	4-L	5-L	6-L	8-L	Zerozone 405	505	556	708	758
CABINET SPECIFICATIONS														
Overall dimensions, including hardware														
Height (inches)	55⅝	60⅜	59⅝	60⅜	59⅝	54	57⅛	59⅞	59⅜	52	55⅝	59⅜	61½	62⅝
Width (inches)	24⅛	28⅝	32⅝	28⅝	32⅝	24⅜	26⅝	30½	34⅛	24½	25	26	31½	35⅜
Depth (inches)	25⅝	25¾	27	25¾	27	20⅝	22⅛	22⅛	23⅛	22¼	22⅞	23¾	24⅝	26⅜
Thickness of insulation														
Top of cabinet (inches)	3	3	3	3	3	2	2½	3	3	2	2	2½	3	4
Sides of cabinet (inches)	2½	3	3	3	3	2	2½	3	3	2	2	2½	3	4
Bottom of cabinet (inches)	3	3	3	3	3	2	2½	3	3	2	2	2½	3	4
Inside dimensions of cabinet liner														
Height (inches)	25⅞	30	29¼	30	29¼	27½	30½	32	32	25	26	29	30	30
Width (inches)	18	21⅝	25⅝	21⅝	25⅝	19½	20½	23⅝	27¼	19½	20	20	24½	26½
Depth (inches)	19	18	19¼	18	19¼	15	16	15½	16½	15½	15¼	15¼	16	16¼
Thickness of exterior metal (gauge)	20	20	20	20	20	20	20	20	20	22	22	22	22	22
Thickness of interior metal (gauge)	18	18	18	18	18	18	18	18	18	20	20	20	20	20
Number of refrigerator doors	1	1	2	1	1	1	1	1	1	1	1	1	1	2
STORAGE CAPACITY														
Gross food storage capacity (cu. ft.)	5.1	6.7	8.4	6.7	8.4	4.65	5.72	6.78	8.3	4.4	4.6	5.1	6.8	7.5
Net food storage (cu. ft.) (Nema rating)	4.5	6.0	7.6	6.0	7.6	4.0	5.0	6.0	7.5	3.8	4.0	4.6	6.0	6.8
Number of shelves	3	4	4	4	4	3	5	5	5	3	4	4	4	4
Total shelf area (sq. ft.) (Nema rating)	8.5	12.3	14.5	14.5	14.5	8.12	10.21	12.11	15.0	7.0	8.0	8.75	10.5	12.0
Greatest distance between any two shelves	12⅞	10⅞	13⅛	10⅞	13⅛	12½	15	12	12	12	12	13	13¾	13½
Shortest distance between any two shelves	5⅞	5⅜	5⅛	5⅜	5⅛	4¼	4	4½	4⅛	5¾	4	4½	4	4¾
ICE CUBE TRAYS														
Number of ice cube trays	2	3	5	3	5	2	3	3	5	2	2	3	3	3
Inside dimensions of trays (inches)														
Length (at top of tray)	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	10½	10½
Width (at top of tray)	5¼	5¼	5¼	5¼	5¼	5¼	5¼	5¼	5¼	3¾	3¾	3¾	4½	4½
Depth	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	36	54	90	54	90	36	54	54	90	42	42	63	63	63
Weight of ice cubes produced (lbs.)	4	6	10	6	10	4	6	6	10	4	4	6	7½	7½
COMPRESSOR SPECIFICATIONS														
Bore (inches)	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Stroke (inches)	1½	1½	1½	1½	1½	1½	1½	1½	1½	1⅝	1⅝	1⅝	1⅝	1⅝
Standard speed (rpm)	460	530	530	530	530	460	460	530	530	400	500	500	500	500
Number of cylinders	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Compressor capacity (lbs.) (ASRE rating)	110	134	134	134	134	110	110	134	134	69	86	86	86	86
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-8	1-6	1-6	1-6	1-6
Standard motor speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1725	1725	1725	1725	1725
Quantity of refrigerant in system (lbs.)	2	2½	2¾	2½	2¾	2	2	2½	2¾	4¼	4¼	4¼	4¼	4¼
Quantity of lubricant in system	1 qt.	1 qt.	1 qt.	1 qt.	1 qt.	1 qt.	1 qt.	1 qt.	1 qt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.
WEIGHT														
Net weight of complete refrigerator (lbs.)										279	291	320	401	463
Total shipping weight (lbs.)										325	340	370	460	538
PRICE														
F. o. b. factory price										$99.50	159.50	189.50	229.50	269.50
Retail price, without installation	$149.50	189.50	234.50	210.00	255.00	144.00	168.00	209.00	242.00					
Installed price										$119.50	159.50	189.50	229.50	269.50
CABINET MATERIALS														
Make of cabinet	LT models—Cabranette & Gurney; PT models—Eagle; L models—Seeger									Wepsco Steel Products Co.				
Material used for exterior	Metal									Metal				
Make of exterior metal										Furniture steel				
Material used for frame	Wood									Wood				
Make of interior metal										Enameling stock				
Finish of shelves	Tinned									Tinned				
INSULATION														
Make of insulation	Seeger—Corkboard; all others—Rokflos									Insulite				
Nature of insulating material	Corkboard—vegetable; Rokflos—mineral									Vegetable				
Bulk or formed slabs	Formed slabs									Formed slabs				
How is insulation waterproofed	Asphalted paper									Wrapped				
Make of waterproofing material										30-30-30 paper				
FINISH														
Cabinet finish (exterior)	Eagle—porcelain; all others—lacquer									Lacquer				
Make of exterior finish										Bradley-Vrooman				
Colors offered as standard	White									White				
Colors offered on special order	Any									None				
Cabinet finish (interior)	Porcelain									Porcelain				
Make of interior finish														
HARDWARE														
Make of hardware	LT & PT models—Grand Rapids Brass									Winters & Crampton				
Process of manufacture	Stamped									Stamped				
Basic metal of hardware	Brass									Brass				
Finish of hardware	Chromium									Chromium				
DOORS														
Material used for breaker strip	Bakelite									Model 405—wood; all others—Odorless Bakelite				
Material used for gasket	Rubber									Rubber				
Make or brand of gasket										Miller				
EVAPORATOR														
Make of evaporator	American Radiator									Zerozone				
Evaporator construction	Shell									Tubular				
Metal used for evaporator	Aluminum									Copper				
Type of refrigerant control	Expansion valve									Low side float				
Make of expansion valve	American Radiator									None				
Make of brine tank	None									None				
Solution used for brine	None									None				
Type and make of trays	Aluminum and Easy-Out									Tinned copper				
Dimensions of ice cube (inches)										708 & 758 models — 1½x1½x1½; all others—1¼x1½				
SPECIAL FEATURES	Vegetable tray													
COMPRESSOR														
Make of compressor	Keokuk									Zerozone				
Type of system	Conventional									Conventional				
Type of compressor	Reciprocating									Reciprocating				
Compressor drive	Belt									Belt				
Type and make of shaft seal	Keokuk bellows									Sylphon				
Location of compressor	L models—below; all others—above									Below				
CONDENSER														
Make of condenser	McCord									Bush				
Fan or natural draft cooling	Fan									Fan				
Type of condenser	Finned tube									Finned tube				
REFRIGERANT														
Refrigerant used	Sulphur Dioxide									Sulphur Dioxide				
Trade name										Ansul				
Chemical formula	SO_2									SO_2				
LUBRICATION														
Make of compressor lubricant	Amalie									Sunco				
How often should motor be oiled	Annually									Semi-annually				
MOTOR														
Make of motor	Century									General Electric, Wagner, and Century				
Type of motor	Capacitor									Capacitor				
Method of starting	Direct									Direct				
How adapted to odd frequency	Change motor									Change motor				
What additional cost is entailed														
How adapted to direct current	Change motor									Change motor				
What additional cost is entailed														
Type of wire or cable used	Rubber covered									Rubber covered				
Make of wire or cable used	American Mfg. Co.									Belden				
CONTROL														
Make of control	Cutler-Hammer									Ranco				
Type of control	Temperature									Temperature				
Temperature regulation method	Manual regulator									Manual regulator				
Make of overload cut-out										Ranco				
How is defrosting accomplished	Shut down unit									Shut down unit				
POLICY														
Who determines retail price	Retailer									Manufacturer				
Guarantee period on cabinet	Three years									One year				
Guarantee period on system	Dealer, distributor or factory									One year				
By whom serviced										Distributor and factory				
Are replacement parts sold to independent service companies	Yes									Yes (to those who qualify)				


WILL MY REFRIGERATOR GIVE THE PERFORMANCE THAT BUILDS
GOODWILL? WILL IT STAND UP? WILL I BE FACED
WITH THE PROBLEM OF EXPENSIVE FIELD SERVICE?

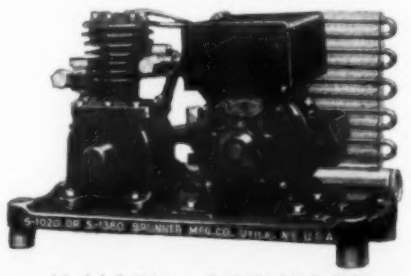


Model S-95—Compressor
Methyl Chloride 83 lb IME
Sulphur Dioxide 70 lb IME



Model S-135—Compressor
Methyl Chloride Maximum 166 lb IME
Sulphur Dioxide Maximum 140 lb IME

Model S-970—High Side
1/6 H. P. for small low priced leader Cabinets



Model S-1020 or S-1380—High Side
1/6 and 1/4 H. P. for Cabinets up to 12 cu. ft. Gross Capacity

Banish Uncertainty on Vital Questions like these with High Sides and Compressors by

BRUNNER

Brunner High Sides and Compressors are built to lick the high cost of excessive servicing. They give the kind of performance that makes refrigerators stay sold—that gets dealer enthusiasm and holds it—that creates consumer goodwill and broadens demand. They put black figures in the profit column instead of the red ones that are too often written there by the high cost of servicing.

Twenty-six years of knowing how — twenty-six years devoted to the manufacture of compressors and in solving problems in connection with their uses are put into the refrigerating equipment Brunner offers you today.

Quiet, rugged, fool-proof high sides and compressors by Brunner provide a sound foundation on which to build with confidence — to make profits. Test them along side of the highest priced units on the market. You will find, as have many other large companies, that Brunner equipment rates at the top.

Note to Manufacturers, Assemblers, Servicing Organizations

You'll do your business a good turn by getting the complete Brunner story. It speaks not only in terms of quality, specifications, prices—but Engineering Service as well. Many manufacturers and assemblers have found that Brunner Equipment is priced to get sales on a competitive basis, plus a quality that measures up to superlative claims of performance, long life, freedom from trouble. Servicing organizations which appreciate the rapidly increasing profit possibilities of replacing noisy, worn out high sides or condensing units instead of doctoring them up—will be impressed with the story Brunner wants to tell them. Write or wire today. No obligation.

There's profit in the facts this coupon will bring you.

Brunner Manufacturing Co.,
Refrigeration Division
Utica, N. Y., U. S. A.

Please send me the complete story about Brunner High Sides and Compressors.

Name .....

Address .....

BRUNNER MANUFACTURING CO. REFRIGERATION DIVISION — BRUNNER — UTICA, NEW YORK, U. S. A.

DEPENDABILITY IN REFRIGERATOR CONTROL

How much is it worth to you to minimize your service complaints on refrigerator control — to cut service charges to the bone?

The unvarying reliability of General Electric control for domestic refrigerators is attested by the manufacturers who have used it this season and have found it to be the answer to their problem of high-service costs.

Easy to wire; easy to mount anywhere on your refrigerator; beautiful in appearance; with accurate temperature control and with overload protection — these features and a host of others make this new control of exceptional interest to manufacturers of domestic electric refrigerators, and to their dealers.

301-111

GENERAL ELECTRIC

WESTINGHOUSE BUILDS NEW HERMETIC UNITS

(Concluded from Page 1, Column 1)

ice maker is a special dual-automatic refrigerator designed to freeze ice cubes quickly and to store them for future use. It has a capacity of 20 lbs, or 192 cubes in eight trays, at one freezing. It also has a storage capacity of 48 lbs. (440 cubes) in four containers. The chilling unit and defrosting tray are of porcelain. The ice maker stands 60⅞ in. high, 31⅞. in wide, and 26¾ in. deep.

The models E and J, wet type milk coolers, have space for storing as many as 12 40-qt. cans at a time.

In the dry storage cooler line, model B cools 192 quart bottles of milk or less. BI coolers will cool up to 96 bottles and freeze 40 lbs. of ice daily.

The milk coolers are equipped with either ¼-hp. or ½-hp. commercial units, depending upon the size and application.

Air Conditioner Used In Cooling Office

(Concluded from Page 1, Column 4)

moisture and cools the air at the same time.

Serving the air conditioning plant as well as a small office refrigerator in Mr. Johnston's office is a 1-ton water-cooled Universal Cooler condensing unit installed in the basement. Two ⅝-in. suction lines are run from the evaporator to the compressor, Mr. Higham states, explaining that the extra line capacity eliminates an excessive pressure drop between those two points.

A ½-in. drain pipe carries the spray water and condensation to the sewer. Installation of a sump in the line has been found effective in eliminating any gurgling noise.

Detroit Lubricator products are much in evidence in the equipment; a D-L Humidistat starts the D-L solenoid valve when the humidity gets low to supply additional moisture to the air through water spray, a D-L automatic expansion valve feeds the evaporator, and a D-L reverse action thermostat starts the refrigerating machine when room temperature reaches the maximum permitted. All electrical controls are operated from a 20-volt step-down transformer to simplify insulation and installation of the electrical equipment.

designing DOORSEALS ?

no one knows rubber like MILLER

THE young electric refrigerator industry, like all other infant industries, made some mistakes in its first models.

But doorseal, from the very beginning, did a good job, and we are proud of the fact that we were able to help.

Engineers asked us to collaborate in the early days—and they still ask our advice—because we have had so many years of experience in the design and manufacture of every conceivable type of rubber article.

Perhaps we can better the shapes, strengthen the insulating properties in your doorseal and make it easier to apply. Address, The Miller Rubber Products Co., (Inc.), Akron, Ohio.

Advertising Air Conditioning

Illinois Central
THE ROAD OF TRAVEL LUXURY

ANNOUNCES
ALL EQUIPMENT
ON ALL TRAINS
BETWEEN CHICAGO AND
ST. LOUIS
will be
Air-Cooled

"Cool as a mountain stream"

"The DAYLIGHT," Illinois Central's popular 6½ hour day train from Chicago 11:45 a. m. to St. Louis—mechanically air-cooled and air-conditioned throughout—cool and clean as a mountain stream—silenced—the final word in comfort and cleanliness! Think what this means in terms of personal comfort. A new sense of freshness and cleanliness throughout—in Library-Lounge and Parlor Cars, Dining Car and Coaches. A constant supply of purified air, sweet, wholesome, clean air—with sealed windows to protect from outside dust, heat and noise.

Two companion trains pre-cooled—"THE MICHIGAN BOULEVARD," Lv. Chicago 4:30 p. m. and "The DIAMOND," Lv. Chicago 11:55 p. m.—Parlor cars, Sleeping cars, Dining cars, Salon-Buffet car and coaches will be completely pre-cooled. *No humidity—you rest and sleep in comfort.*

Installation Commences June 25th

For further details phone or write
W. P. WHEELAN
Traveling Passenger Agent
Illinois Central System
7-210 and 7-211 General Motors Building
3044 W. Grand Blvd.
Detroit, Mich.
Phones Madison 1811-1816

3990

ILLINOIS CENTRAL SYSTEM — COURTESY EFFICIENT SERVICE ALWAYS

SEE CHICAGO'S 1933 WORLD'S FAIR
—Now Under Construction—
FROM ILLINOIS CENTRAL TRAINS

The above advertisement announcing air conditioned trains appeared in Middle Western newspapers during the past week.

Carrier to Merchandise Air Conditioners Through Specialty Salesmen

(Concluded from Page 1, Column 5)

explained, and in these cases they are not termed air conditioners, but humidifiers, air coolers, etc. Compromise equipment should not borrow the mantle of air conditioning, he believes.

The degree of cooling possible without refrigeration is unsatisfactory in air conditioning for human comfort, he declared.

Mr. French then described several of the air tempering products of his company, with special attention to the unit type coolers for small installations.

The "Weathermaker" has been provided with refrigerated cooling, he pointed out, by the steam ejector system. The steam boiler of the home is used to supply heat in the winter, as well as steam for the cooling plant in summer.

Next on the program was Herbert Laube of the Brunswick-Kroeschell division. He cited several interesting applications of commercial refrigeration such as an order of last week for equipment to produce −153° for a Dupont industrial process.

He showed a table charting logical buyers of commercial refrigeration—retail stores, food serving establishments, and institutions.

"Market statistics indicate that there are 750,000 stores in this country that should have refrigeration, 40 per cent of which lack mechanical refrigeration, and many of the remainder having inadequate equipment," he declared.

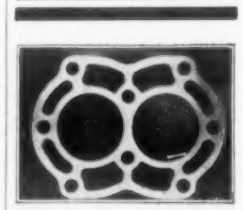
He concluded by pointing out the necessity for balancing a commercial installation, that is choosing a compressor properly sized to carry its load.

A condensing unit that is too small will not produce satisfactory results, one that is too large may cause the evaporator to freeze up, he said. When it is desirable to furnish an extra large compressor in anticipation of additional loads, a smaller motor pulley can be used, he explained.

The group then adjourned to a conference room in the factory building where a portable ice room cooler was keeping the air in a comfortable state. John M. Bickel, merchandising manager of the Carrier-York division, demonstrated the machine and answered questions about it.

The cabinet holds a charge of 300 lbs. of ice supported on grids. About 35 gal. of water accumulate from one charge of ice, and can be removed by a gravity drain, a water ejector, or a water pump. David M. Trilling of Trilling and Montague, Philadelphia, who is just taking on the ice cooler, reported that the ice companies are showing a keen interest in suggesting prospects.

Because of the brevity of the season for the coolers, he said that all time payments were to be made on a three to four months basis.

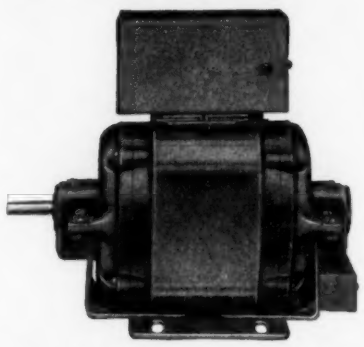


GASKETS
FOR
REFRIGERATION

Made of a special alloy metal developed for electric refrigeration.
It has a high melting point, and a dull matte finish that is very important for lasting service.
Does not flow or creep under pressure. Once tight, will stay tight for the life of the machine.
Will hold, regardless of the refrigerant used and will not shed particles of material to clog up working parts.
Let us send you sample gasket for test. Send us templates or drawings.

CHICAGO-WILCOX MFG. CO.
7701 Avalon Ave. Chicago, Illinois

New Baldor Motor



New refrigeration motor of Baldor Electric Co., St. Louis. See story on page 1.

COPELAND UNITS SERVE AMUSEMENT PARK STAND

NEW HAVEN, Conn.—Installation of equipment in the establishment of Jake's Viennas, Inc., Savin Rock, an amusement park, presented an unusual problem in refrigeration engineering, which was solved by the Westville Electric Co., Copeland dealer, for which C. F. Ganter is commercial refrigeration manager.

Jake's Viennas, Inc., a business which rose to local fame through the medium of the delectable "hot dog," acquired three Booth frozen custard machines which were set up in the front of the stand on Savin Rock's main thoroughfare. The Westville Electric Co. was called upon to supply the refrigerating equipment.

Mr. Ganter's survey of the problem indicated the need for a 1,200-gal. brine tank. This had to be built and welded in the basement of the building, because none of the doors would permit entrance of such a bulky object. The tank was insulated with six inches of corkboard throughout.

Two Copeland units, a 1-hp. model X, and a 2-hp. model T were installed next to the brine tank. In addition to cooling the frozen custard machines themselves, the units had to provide a different temperature for a six-can milk cabinet used for storing and pre-cooling the custard mix.

To meet this condition, a double control was installed on the units. A temperature control is used on the model T and a pressure control on the X. The T unit is used exclusively for refrigerating the brine tank, while the X furnishes refrigeration for the milk cabinet and is also connected to a coil in the brine tank.

The smaller unit thus cools the storage cabinet and at the same time helps its big brother with the brine tank job. The capacity of the system is ample to manufacture 200 gals. of frozen custard during an 8-hour period. This capacity, however, would only be needed on peak days during midsummer when consumer demand is very heavy.

Brine is pumped from the basement tank to the custard machines and milk cabinet on the ground floor of the stand, through 1-in. pipes insulated with corkboard.

Readers' Comments on Specifications

Trade Highly Pleased

The Starr Co.
Richmond, Ind.
June 10, 1932.

Editor:

Let us compliment you on the wonderful way in which you handled the specifications in your issue of May 18 and we are sure that the trade will be highly pleased with your coming issue for June 29.

H. J. WIGGANS,
Refrigerator Division Advertising.

Why Electro-Kold Is Missing

E. S. Matthews, Inc.
Spokane, Wash.
June 23, 1932.

Editor:

We have your letter of June 18 together with previous specification blanks asking us to prepare them for publica- in your June 29 issue. Due to the reorganization of the old Electro-Kold Corp. we are completely re-vamping our models and, at the present time, could only give information on models which will shortly be changed.

If it were not for this fact we should be very glad to comply with your request. Possibly, there is some way by which you could mention this fact by stating that the models are being changed and that complete specifications are not yet available.

E. S. MATTHEWS,
President.

Comparative Data Only

Kelvinator Corp.
Detroit
June 10, 1932.

Editor:

Relative to your letter of June 7 attaching specifications on electric refrigeration on which you ask for additional information, would say that it was our understanding that these specifications were being published with the thought in mind of making it possible for dealers in electric refrigeration to compare electric refrigerators from the purchaser's standpoint.

In other words if one dealer selling in competition with another found that his competitor was making untrue statements he could check up such statements and set the customer right. It was not our understanding that these specification sheets were to be used to give full engineering data to the trade. It was with this thought in mind therefore, that certain questions on your questionnaire were left blank.

In the sheet which you have returned to me certain lines have been marked to be filled out, and in some instances we do not feel that the information asked for is in line with the original reason for publishing the specifications.

For instance, I cannot see why the make of the hardware used is of interest to a purchaser of an electric refrigerator, nor such details as material used for breaker strip, material used for gasket, make or brand of gasket, etc. Even still further am I unable to understand why a purchaser would be interested in the make or trade name of the metal used for the exterior of the cabinet.

Such questions would seem to me entirely beyond the necessity of any dealer in meeting competitive situations. I am therefore, filling out these sheets only on those items which would seem to us to be of considerable importance to the purchaser.

We have also left blank the column for gross food storage capacity as the customer does not buy gross, he buys net storage capacity, and that has been given in the specifications.

J. A. HARLAN.

Likes Idea of Stressing Quality Parts

Kerotest Mfg. Co.
2525 Liberty Ave.
Pittsburgh
June 10, 1932.

Advertising manager:

We think the idea expressed in your circular letter of June 7, addressed to manufacturers of parts, materials and accessories for use in the building of electric refrigerators, is a splendid one, and follows along the line of the development of the automotive industry. We don't have to stretch our memory very far to consider that there was a time when the average automobile manufacturer was advertising the fact that his was not an assembled job, but instead all parts made within the confines of his factory. Gradually there developed specialists in the manufacture of various items entering into the construction of an automobile, until today as we read the specifications we note that they don't hesitate to mention the inclusion of "this specialist's product" and "that specialist's other product" etc.

J. S. FORBES,
Treasurer.

Servel Management Says "No!"

Servel Sales, Inc.
Evansville, Ind.
June 16, 1932.

Editor:

We note from your letter of June 7 that you contemplate publishing in the June 29 issue of the NEWS, a section similar to that published on May 18, containing specifications of all the various makes of electric refrigerators. You ask if it will not be possible for us to furnish you with specifications on the various models of our Servel hermetic line, inasmuch as these were not included in the last issue.

I am sorry that I must inform you that our management is still of the opinion that it will serve no good purpose for these specifications to appear. Rather, they feel that such specifications will more likely be used to distinct disadvantage by various companies, since it is always possible to put an improper and distorted interpretation upon such facts, in making comparisons.

I am sorry that we must again refuse our cooperation in this regard, and trust that you understand it is occasioned only by our conviction, as above stated. Please believe that we would like very much to cooperate with you were it not for this fact.

W. PAUL JONES,
Manager, advertising and sales promotion.

Wants f.o.b. Factory Prices

Gaertner Electric Co.
3521 North Grand Blvd.
St. Louis, Mo.
June 22, 1932.

Editor:

It is our understanding that you are going to make a reprint of the refrigerator specifications you published in the May 18 issue on June 29 and request that you see that we get these copies.

We would like to make a suggestion that you insist upon getting the factories selling price f.o.b. as we know several companies do not show their prices. We are writing to the Copeland factory suggesting that they give you their prices and hope that you will be successful in obtaining these prices.

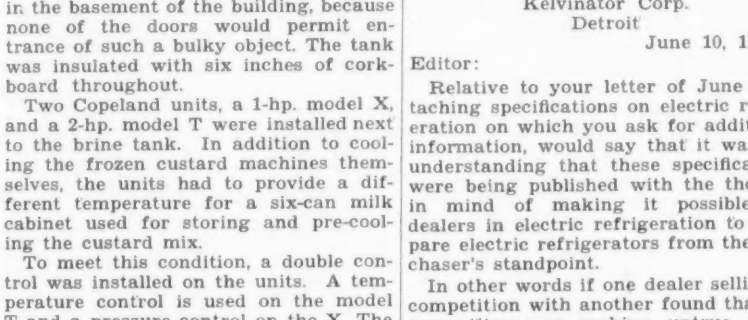
The writer wishes to compliment you on this kind of information as it is very beneficial in selling and hope that you will continue to give us more information just as valuable.

G. GAERTNER.

YORK MACHINE CONDITIONS OMAHA RESTAURANT

OMAHA—York engineers have installed an air conditioning system in the Somberg Restaurant here. The York 4x4 (doubled) was used and will keep the air at least 15° below that outside at all times. The room serviced has over 58,000 cu. ft. of space. The job completed cost Mr. Somberg $3,500.

WOLVERINE
Seamless Copper Dehydrated Tubing



This Famous Seal *Guarantees* Satisfaction

Every inch of every coil that has this trade mark seal is *quality*. *Drawn* to exact specifications—A.S.T.M. (B68-30T)—*annealed* to perfect uniformity under automatic electric controls—*dehydrated* by special 100% process—there can be no question about your satisfaction. Depend on the "W" seal. Plain or Tin Plated in 25-50-75 and 100-ft. Coils. Quick Shipment from large stock.

WOLVERINE TUBE CO.

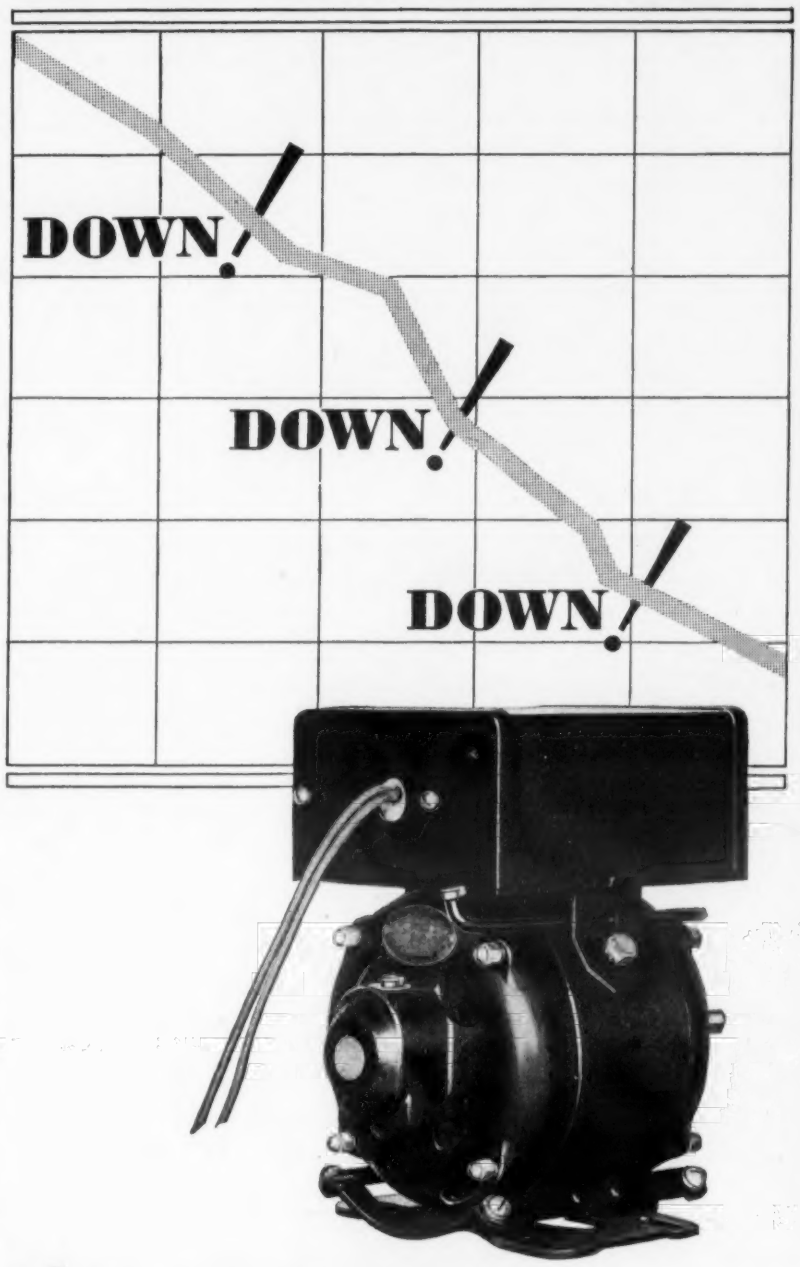
SEAMLESS COPPER BRASS & ALUMINUM

1491 Central Ave. Detroit, Mich.

Export Dept.—H. M. Robins Company, Detroit

Sales offices in 26 cities. Eastern Sales Office, 420 Lexington Ave., New York. Stock available at Los Angeles, 1015 E. 16th St.

G-E TYPE KC



go your service problems

WITH the Type KC *"care-free"* capacitor-motor in your refrigerator, the graph of your service complaints approaches zero. The enviable reputation of this motor is attested by the many manufacturers who have adopted it.

The *"care-free"* motor, because of extreme simplicity of design, is unusually dependable. Its long life is the result of minimized points of wear.

The Type KC *"care-free"* capacitor-motor represents the highest achievement in refrigerator-motor design—reliable, quiet, and economical. It is the *correct* motor for your refrigerator.

210-152

GENERAL ELECTRIC

Copeland, Kelvinator and Buckeye Specifications

Copeland

COPELAND PRODUCTS, INC.
332 Cass Ave., Mt. Clemens, Mich.

Model or Catalog No.	A-402	A-442	P-442	A562	A-522	P-522	A-612	P-612	A-772	P-772	D-682	E-682	D-932	E-932	D-932-2	E-932-2	E-1152
CABINET SPECIFICATIONS																	
Overall dimensions, including hardware																	
Height (inches)	49⅜	52⅜	52⅜	58⅜	52½	52½	56⅛	56⅛	62⅛	62⅛	59¼	59¼	66½	66½	66½	66½	66½
Width (inches)	24½	24⅜	24⅜	24⅜	26⅝	26⅝	30¼	30¼	30¼	30¼	34⅛	34⅛	34⅛	34⅛	34⅛	34½	52
Depth (inches)	21¼	24⅞	24⅞	24⅞	26⅞	26⅞	27	27	27	27	27½	27½	27½	27½	27½	27½	27½
Thickness of insulation																	
Top of cabinet (inches)	2	2½	2½	2½	2½	2½	2½	2½	2½	2½	3	3	3	3	3	3	3
Sides of cabinet (inches)	1½	2	2	2	2	2	2	2	2	2	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜	2⅜
Bottom of cabinet (inches)	1½	2½	2½	2½	2½	2½	2½	2½	2½	2½	3½	3½	3½	3½	3½	3½	3½
Inside dimensions of cabinet liner																	
Height (inches)	24⅛	25⅛	25⅛	31⅛	25⅛	25⅛	25¾	25¾	31¾	31¾	26⅜	26⅜	33⅝	33⅝	33⅝	33⅝	33⅝
Width (inches)	20½	19½	19½	19½	21½	21½	25⅛	25⅛	25⅛	25⅛	28¼	28¼	28¼	28¼	28¼	28¼	46⅛
Depth (inches)	16	18	18	18	19⅞	19⅞	19⅞	19⅞	19⅞	19⅞	19¾	19¾	19¾	19¾	19¾	19¾	19¾
Thickness of exterior metal (gauge)	20	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19
Thickness of interior metal (gauge)	20	20	20	20	20	20	20	20	20	20	18	18	18	18	18	18	18
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3
STORAGE CAPACITY																	
Gross food storage capacity (cu. ft.)	4.58	5.12	5.12	6.33	6.25	6.25	7.46	7.46	9.20	9.20	8.55	8.55	10.92	10.92	10.92	10.92	17.78
Net food storage (cu. ft.) (Nema rating)	4.00	4.40	4.40	5.61	5.21	5.21	6.17	6.17	7.68	7.68	6.83	6.83	9.36	9.36	9.36	9.36	15.52
Number of shelves	3	3	3	3	3	3	3	3	4	4	4	3	5	4	5	4	8
Total shelf area (sq. ft.) (Nema rating)	9.08	9.08	9.08	9.08	11.15	11.15	12.75	12.75	15.61	15.61	12.75	12.75	15.61	15.61	15.61	15.61	25.91
Greatest distance between any two shelves	6⅝	6⅝	6⅝	10¼	6⅞	6⅞	6⅝	6⅝	7½	7½	9⅞	9⅞	10⅜	10⅜	10⅜	10⅜	10⅜
Shortest distance between any two shelves	5⅛	5⅞	5⅞	5½	5⅞	5⅞	6¼	6¼	5⅝	5⅝	5⅛	5⅛	5¼	5¼	5¼	5¼	5¼
ICE CUBE TRAYS																	
Number of ice cube trays	2	2	2	2	2	2	3	3	4	4	3	3	4	4	4	4	4
Inside dimensions of trays (inches)																	
Length (at top of tray)	9¾	9¾	9¾	9¾	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛	12⅛
Width (at top of tray)	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝	3⅝
Depth (shallow tray)	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Depth (deep tray)	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2¾	2⅝	2¾	2¾	2¾	2¾
Number of cubes produced at one freezing	63	63	63	63	81	81	108	108	162	162	108	108	162	162	162	162	162
Weight of ice cubes produced (lbs.)	4.05	4.05	4.05	4.05	5.21	5.21	6.95	6.95	10.6	10.6	6.95	6.95	10.6	10.6	10.6	10.6	10.6
COMPRESSOR SPECIFICATIONS																	
Compressor capacity (lbs.) (ASRE rating)	99	99	99	99	160	160	160	160	160	160	160	160	160	160	230	230	230
Motor size (hp.)	1-8	1-8	1-8	1-8	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-4	1-4
Quantity of lubricant in system	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	⅝ pt.	1¾ pt.	1¾ pt.	1¾ pt.
WEIGHT																	
Net weight of complete refrigerator (lbs.)	242	265	288	279	311	333	353	363	391	410	477	497	544	551	571	578	715
Total shipping weight (lbs.)	290	320	343	337	371	393	423	433	465	484	587	607	665	672	692	699	898

CABINET MATERIALS

Make of cabinet	A-402 — Truscon; D & E models—Belding Hall; all others—Leonard
Material used for exterior	Metal
Make of exterior metal	
Material used for frame	Truscon — steel; all others—wood
Make of interior metal	Belding Hall—Armco; all others — enameling steel
Finish of shelves	Tinned

INSULATION

Make of insulation	D & E models—Dry-Zero; all others—Cellboard & Celotex
Nature of insulating material	Vegetable
Bulk or formed slabs	Formed slabs

FINISH

Cabinet finish (exterior)	A models—lacquer; others—porcelain.
Make of exterior finish	
Colors offered as standard	White
Colors offered on special order	None except tops of D & E models
Cabinet finish (interior)	Porcelain
Make of interior finish	

HARDWARE

Make of hardware	A-402 — Grand Rapids Brass; D & E models — Doehler; all others—Winters & Crampton
Process of manufacture	Doehler — die cast; all others—stamped
Basic metal of hardware	Grand Rapids Brass & Winters & Crampton—brass
Finish of hardware	Chromium

DOORS

Material used for breaker strip	A-402, A-442, P-442 & A-562—wood; all others—rubber
Material used for gasket	D & E models—rubber cloth; all others—rubber
Make or brand of gasket	D & E models—Backstay Welt — all others—Miller

EVAPORATOR

Make of evaporator	Copeland
Evaporator construction	Tubular
Metal used for evaporator	Copper
Type of refrigerant control	Expansion valve
Make of expansion valve	Detroit Lubricator
Make of brine tank	A-402, A-442, P-442 & A-562—none; all others—Copeland
Solution used for brine	Glycerine & water
Type and make of trays	A-402, A-442, P-442 & A-562—aluminum; all others — aluminum & rubber
Dimensions of ice cube (inches)	1x1¼x1¼

SPECIAL FEATURES

Interior light except A-402, A-442, P-442 & A-562
Slide basket except A-402
Vegetable tray — E models
Telescoping shelf except A-402
Water cooling tank —D & E models

COMPRESSOR

Make of compressor	Copeland
Type of system	Conventional
Type of compressor	Reciprocating
Compressor drive	Belt
Type and make of shaft seal	Copeland metallic
Location of compressor	Below

CONDENSER

Make of condenser	Bush
Fan or natural draft cooling	Fan
Type of condenser	Finned tube

REFRIGERANT

Refrigerant used	A-402, A-442, P-442, A-562, D-932-2, E-932-2 & E-1552—Methyl Chloride; all others—Iso-Butane
Trade name	
Chemical formula	Methyl chloride — CH_3Cl Iso-Butane—C_4H_{10}

LUBRICATION

Make of compressor lubricant	Copeland special
When should motor be oiled	Annually

MOTOR

Make of motor	Delco
Type of motor	Repulsion-Induction
Method of starting	Direct
How adapted to odd frequency	Change motor
What additional cost is entailed	None
How adapted to direct current	Change motor
What additional cost is entailed	None

CONTROL

Make of control	Bishop & Babcock
Type of control	Temperature
Temperature regulation method	Manual regulator
Make of overload cut-out	D & E models—Delco; all others—none
How is defrosting accomplished	Shut down unit

POLICY

Who determines retail price	Distributor
Guarantee period on cabinet	Factory to distributor—15 months
Guarantee period on system	Factory to distributor—15 months
By whom serviced	Dealer & distributor
Are replacement parts sold to independent service companies	No

Kelvinator

KELVINATOR CORP.
14250 Plymouth Rd., Detroit, Mich.

Model or Catalog No.	D-22	D-14	D-11	D-8	D-6	S-4	S-5	S-7	S-9	PK-7	PK-6	PK-5	PK-4	K-7	K-6	K-5	K-4
CABINET SPECIFICATIONS																	
Overall dimensions, including hardware																	
Height (inches)	70⅛	70⅛	68⅝	66¼	59¼	52⅛	58	58⅝	63⅞	57	56¼	51½	49¾	57	56¼	51½	49¾
Width (inches)	67⅞	48	48	36	36	25⅜	25⅜	26¼	35	31⅝	28½	28½	26⅛	31⅝	28½	28½	26⅛
Depth (inches)	28⅝	28⅜	28⅜	27⅞	27⅞	23⅛	23⅛	31⅝	27⅜	25¾	25¾	25¾	24¼	25¾	25¾	25¾	24¼
Inside dimensions of cabinet liner																	
Height (inches)	41⅜	41⅜	34⅜	34⅜	27⅜	26⅞	32⅝	32⅛	34⅜	30	29¼	24½	24	30	29¼	24½	24
Width (inches)	58⅞	39⅛	39⅛	28⅛	28⅛	19½	19½	24⅞	28⅛	25⅛	22	22	19½	25⅛	22	22	19½
Depth (inches)	18¾	18¾	18¾	18¾	18¾	15¾	15¾	18	19⅛	18¾	18¾	18¾	16¾	18¾	18¾	18¾	16¾
Thickness of exterior metal (gauge)	20	20	20	20	20	20	20	20	20								
Thickness of interior metal (gauge)	20	20	20	20	20	20	20	20	20								
Number of refrigerator doors	2	2	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1
STORAGE CAPACITY																	
Gross food storage capacity (cu. ft.)																	
Net food storage (cu. ft.) (Nema rating)	22.27	14.55	11.68	8.2	6.38	4.3	5.14	7.04	8.82	6.9	5.94	4.94	4.0	6.9	5.94	4.94	4.0
Number of shelves	10	5	4	4	3	3	4	4	4	4	4	3	3	4	4	3	3
Total shelf area (sq. ft.) (Nema rating)	41.84	26.36	22.73	16.3	12.16	8.91	11.05	14.69	16.57	14.2	12.16	10.34	8.21	14.2	12.16	10.34	8.21
Greatest distance between any two shelves	11½	11½	11⅝	11⅝	10⅝	12¼	12¼	11	10⅝	12½	12½	12½	12½	12½	12½	12½	12½
Shortest distance between any two shelves	5⅞	5⅞	5⅛	5⅛	5⅛	4⅞	4⅞	4⅞	6	5⅝	5	5½	5½	5⅝	5	5½	5½
ICE CUBE TRAYS																	
Number of ice cube trays	9	7	7	5	4	3	3	4	4	3	3	3	2	3	3	3	2
Inside dimensions of trays (inches)																	
Length (at top of tray)	13⅛	13⅛	13⅛	13⅛	13⅛	9¾	9¾	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13⅛	13¼	13¼	13¼
Width (at top of tray)	5¾	5¾	5¾	5¾	5¾	5¾	5¾	5¾	5¾	5⅝	3⅞	3⅞	3⅞	5⅝	3⅞	3¾	3¾
Depth (single)	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝
Depth (double)	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛	3⅛								
Depth (triple)	5	5	5	5	5												
Number of cubes produced at one freezing	243	189	189	135	108	42	42	108	108	108	84	63	42	108	84	63	42
Weight of ice cubes produced (lbs.)	34.0	28.5	28.5	23.0	20.25	8.0	8.0	16.5	16.5	11.0	6.8	5.1	3.4	11.0	6.8	5.1	3.4
COMPRESSOR SPECIFICATIONS																	
Compressor capacity (lbs.) (ASRE rating)			200	200	200	112	112	200	200	164	†112	†92	*92	164	†112	†92	*92
Motor size (hp.)	1-3	1-3	1-4	1-4	1-6	1-6	1-6	1-4	1-4	1-5	1-6	1-10	1-10	1-5	1-6	1-10	1-10
WEIGHT																	
Net weight of complete refrigerator (lbs.)																	
Total shipping weight (lbs.)	1405	1075	1000	690	600	352	375	525	640	496	452	411	375	463	424	380	340
PRICE																	
Installed price (before additions for wiring and for freight)	$730.00	600.00	515.00	425.00	381.00	219.00	247.00	308.00	375.00	287.50	254.00	226.50	199.50	233.00	199.50	177.00	149.50

†Special models PK-6S, K-6S, PK-5S and K-5S have capacity of 164 lbs.
*Special models PK-4S and K-4S have capacity of 112 lbs.

CABINET MATERIALS

Make of cabinet	Kelvinator
Material used for exterior	Metal
Make of exterior metal	Enameling iron
Material used for frame	Wood
Make of interior metal	Enameling iron
Finish of shelves	Tinned

INSULATION

Make of insulation	Kelvatex
Nature of insulating material	Vegetable
Bulk or formed slabs	Formed slabs
How is insulation waterproofed	Asphalt compound

FINISH

Cabinet finish (exterior)	K models—lacquer; all others—porcelain
Colors offered as standard	D models—white gray trim; all others—white
Colors offered on special order	None
Cabinet finish (interior)	Porcelain
Make of interior finish	Kelvinator

HARDWARE

Make of hardware	
Process of manufacture	Die cast
Finish of hardware	Chromium

DOORS

Material used for breaker strip	
Material used for gasket	Rubber

EVAPORATOR

Make of evaporator	Kelvinator
Evaporator construction	Shell and tube
Metal used for evaporator	Copper
Type of refrigerant control	PK and K models—low side float; all others — expansion valve
Make of expansion valve	Kelvinator
Make of brine tank	PK and K models—none; all others—Kelvinator
Solution used for brine	Alcohol
Type and make of trays	Metal and Flexotray
Dimensions of ice cube (inches)	1⅛x1½x1⅝

SPECIAL FEATURES

Interior light—all except K models
Vegetable tray—D and S models

CONDENSER

Make of condenser	Kelvinator
Fan or natural draft cooling	Fan
Type of condenser	Finned tube

REFRIGERANT

Refrigerant used	Sulphur Dioxide
Trade name	
Chemical formula	SO_2

COMPRESSOR

Make of compressor	Kelvinator
Type of system	Conventional
Type of compressor	Reciprocating
Compressor drive	Belt
Type and make of shaft seal	Bellows
Location of compressor	Below

LUBRICATION

When should motor be oiled	Annually

MOTOR

Make of motor	Delco
Type of motor	Repulsion-Induction
Method of starting	Direct
How adapted to odd frequency	Change motor
What additional cost is entailed	None
How adapted to direct current	Change motor
What additional cost is entailed	None

CONTROL

Make of control	Kelvinator
Type of control	Temperature
How is defrosting accomplished	Shut down unit

POLICY

Who determines retail price	Manufacturer
Guarantee period on cabinet	Three years
Guarantee period on system	Three years
By whom serviced	Dealer & distributor
Are replacement parts sold to independent service companies	No

Buckeye

DOMESTIC INDUSTRIES, INC.
282 N. Diamond St., Mansfield, Ohio

Model or Catalog No.	44	53	71
CABINET SPECIFICATIONS			
Overall dimensions, including hardware			
Height (inches)	52½	59	59
Width (inches)	24	25½	35
Depth (inches)	21½	21½	22½
Thickness of insulation			
Top of cabinet (inches)	2	2	2½
Sides of cabinet (inches)	2½	3	4
Bottom of cabinet (inches)	2½	3	3
Inside dimensions of cabinet liner			
Height (inches)	....	29½	29½
Width (inches)	....	18¾	26½
Depth (inches)	....	16½	16½
Thickness of exterior metal (gauge)	20	20	20
Thickness of interior metal (gauge)	20	20	20
Number of refrigerator doors	1	1	1
STORAGE CAPACITY			
Gross food storage capacity (cu. ft.)	4.4	5.45	7.7
Net food storage (cu. ft.) (Nema rating)	....	4.8	7.1
Number of shelves	3	3	4
Total shelf area (sq. ft.) (Nema rating)		8.5	11.0
Greatest distance between any two shelves	....	8	6½
Shortest distance between any two shelves	....	5	5
ICE CUBE TRAYS			
Number of ice cube trays	2	3	4
Inside dimensions of trays (inches)			
Length (at top of tray)	10¼	10¼	10¼
Width (at top of tray)	3½	3½	3½
Depth	1¼	1¼	1¼
Number of cubes produced at one freezing	42	63	105
Weight of ice cubes produced (lbs.)	3	4½	7½
COMPRESSOR SPECIFICATIONS			
Compressor capacity (lbs.) (ASRE rating)	74	98.1	119.9
Motor size (hp.)	1-6	1-6	1-6
Quantity of refrigerant in system (lbs.)	1½	1½	2
Quantity of lubricant in system	10 oz.	10 oz.	10 oz.
WEIGHT			
Net weight of complete refrigerator (lbs.)	....	235	295
Total shipping weight (lbs.)	....	350	435
PRICE			
F. o. b. factory price	$89.50	99.50	159.50
Retail price, without installation			
Installed price			

CABINET MATERIALS

Make of cabinet	D. A. Ebinger
Material used for exterior	Metal
Make of exterior metal	Furniture steel
Material used for frame	Wood
Make of interior metal	
Finish of shelves	Tinned

INSULATION

Make of insulation	Balsam Wool
Nature of insulating material	Vegetable
Bulk or formed slabs	Formed slabs

FINISH

Cabinet finish (exterior)	Lacquer
Make of exterior finish	
Colors offered as standard	White
Colors offered on special order	
Cabinet finish (interior)	Porcelain
Make of interior finish	

HARDWARE

Make of hardware	
Process of manufacture	Stamped
Basic metal of hardware	Brass
Finish of hardware	Chromium

DOORS

Material used for breaker strip	Wood
Material used for gasket	Rubber
Make or brand of gasket	

EVAPORATOR

Make of evaporator	Dayton Pump & Mfg. Co.
Evaporator construction	Tubular
Metal used for evaporator	Copper
Type of refrigerant control	Expansion valve
Make of expansion valve	American Radiator
Make of brine tank	None
Solution used for brine	None
Type and make of trays	Aluminum
Dimensions of ice cube (inches)	1⅝x1⅜x1¼

COMPRESSOR

Make of compressor	Dayton Pump & Mfg. Co.
Type of system	Conventional
Type of compressor	Reciprocating
Compressor drive	Belt
Type and make of shaft seal	Bellows
Location of compressor	Above

CONDENSER

Make of condenser	Bush
Fan or natural draft cooling	Fan
Type of condenser	Finned tube

REFRIGERANT

Refrigerant used	Sulphur Dioxide
Trade name	
Chemical formula	SO_2

LUBRICATION

Make of compressor lubricant	
How often should motor be oiled	Semi-annually

MOTOR

Make of motor	Leland
Type of motor	Repulsion-Induction
Method of starting	Direct
How adapted to odd frequency	Change motor
What additional cost is entailed	
How adapted to direct current	Change motor
What additional cost is entailed	

CONTROL

Make of control	Ranco
Type of control	Temperature
Temperature regulation method	Manual regulator
Make of overload cut-out	Ranco
How is defrosting accomplished	Shut down unit

POLICY

Who determines retail price	Manufacturer
Guarantee period on cabinet	One year
Guarantee period on system	One year
By whom serviced	Dealer, distributor or factory
Are replacement parts sold to independent service companies	Yes

Cavalier, Frigidaire and Lectric-Ice Specifications

Cavalier

TENNESSEE FURNITURE CORP.
Chattanooga, Tenn.

Model or Catalog No.	101	119	111	112	121	122	131	132	141	142	152
CABINET SPECIFICATIONS											
Overall dimensions, including hardware											
Height (inches)	56	58	59¾	59¾	62¾	62¾	65¼	65¼	65¼	65¼	65¼
Width (inches)	24⅜	26⅜	24⅜	24⅜	26⅜	26⅜	30½	30½	34⅞	34⅞	40⅜
Depth (inches)	22⅛	22⅞	22½	22½	23⅞	23⅞	23⅞	23⅞	23⅞	23⅞	23⅞
Thickness of insulation											
Top of cabinet (inches)	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½
Sides of cabinet (inches)	2	2½	2	2	2½	2½	3	3	3	3	3
Bottom of cabinet (inches)	2	2½	2	2	2½	2½	3	3	3	3	3
Inside dimensions of cabinet liner											
Height (inches)	27½	30⅛	27½	27½	30⅛	30⅛	32	32	32	32	32
Width (inches)	19½	20½	19½	19½	20½	20½	23⅝	23⅝	28	28	33½
Depth (inches)	15	16	15	15	16	16	15½	15½	15½	15½	15½
Thickness of exterior metal (gauge)	22	20	22	20	20	20	20	20	20	20	20
Thickness of interior metal (gauge)	22	20	22	22	20	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	2
STORAGE CAPACITY											
Gross food storage capacity (cu. ft.)	4.65	5.72	4.65	4.65	5.72	5.72	6.78	6.78	8.04	8.04	9.61
Net food storage (cu. ft.) (Nema rating)	4.13	5.09	4.13	4.13	5.09	5.09	6.04	6.04	7.30	7.30	8.84
Number of shelves	3	3	3	3	3	3	3	3	3	3	5
Total shelf area (sq. ft.) (Nema rating)	8.94	10.41	8.94	8.94	10.41	10.41	11.91	11.91	13.76	13.76	15.36
Greatest distance between any two shelves	5⅞	6¼	5⅞	5⅞	6¼	6¼	6¼	6¼	6¼	6¼	7
Shortest distance between any two shelves	4⅝	5	4⅝	4⅝	5	5	4⅜	4⅜	4⅜	4⅜	5¾
ICE CUBE TRAYS											
Number of ice cube trays	3	3	3	3	3	3	3	3	4	4	5
Inside dimensions of trays (inches)											
Length (at top of tray)	7¼	7¼	7¼	7¼	7¼	7¼	8⅜	8⅜	8⅜	8⅜	8⅜
Width (at top of tray)	3½	3½	3½	3½	3½	3½	5⅛	5⅛	5⅛	5⅛	5⅛
Depth	1¼	1¼	1¼	1¼	1¼	1¼	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	30	30	30	30	30	30	63	63	84	84	105
Weight of ice cubes produced (lbs.)	3	3	3	3	3	3	6	6	8	8	10
COMPRESSOR SPECIFICATIONS											
Bore (inches)	1-5/16	1-5/16	1-5/16	1-5/16	1-5/16	1-5/16	1-5/16	1-5/16	1-5/16	1-5/16	1-5/16
Stroke (inches)	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Standard speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Compressor capacity (lbs.) (ASRE rating)	125	125	125	125	125	125	125	125	175	175	175
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-4	1-4
Standard motor speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Quantity of refrigerant in system (lbs.)	2	2	2	2	2	2	2	2	2	2	2
Quantity of lubricant in system	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.
WEIGHT											
Net weight of complete refrigerator (lbs.)	246	286	256	275	283	308	331	339	370	376	428
Total shipping weight (lbs.)	317	358	334	344	376	388	417	424	462	468	518

CABINET MATERIALS
Make of cabinet: Tennessee Furniture
Material used for exterior: Metal
Make of exterior metal: Lacquer — Furniture sheet; porcelain—Armco
Material used for frame: Wood
Make of interior metal: Armco
Finish of shelves: Tinned

INSULATION
Make of insulation: Dry-Zero
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs
How is insulation waterproofed: Duplex asphalt paper

FINISH
Cabinet finish (exterior): 101, 119, 111, 121, 131, 141—lacquer; others—porcelain
Make of exterior finish: Lacquer—Lily Varnish Co.; porcelain—Chicago Vitreous Enamel Co.
Colors offered as standard: White
Colors offered on special order: Large orders — any color
Cabinet finish (interior): Porcelain
Make of interior finish: Chicago Vitreous Enamel Co.

HARDWARE
Make of hardware: Grand Rapids Brass
Process of manufacture: Stamped
Basic metal of hardware: Brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Model 101 — wood; others—Formica
Material used for gasket: Rubber
Make or brand of gasket: Miller

EVAPORATOR
Make of evaporator: Sunbeam
Evaporator construction: Tubular
Metal used for evaporator: Copper
Type of refrigerant control: Expansion valve
Make of expansion valve: American Radiator
Make of brine tank: None
Type and make of trays: Aluminum
Dimensions of ice cube (inches): 141, 142 & 152—1⅛ x1⅝x1½; all other models—1⅜x1¾x1¼

SPECIAL FEATURES
All models except 101 & 119 — Vegetable storage bin

COMPRESSOR
Make of compressor: Sunbeam
Type of system: Conventional
Type of compressor: Rotary
Compressor drive: Direct
Type and make of shaft seal: Sylphon
Location of compressor: Above

CONDENSER
Make of condenser: Fedders
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

REFRIGERANT
Refrigerant used: Sulphur dioxide
Chemical formula: SO_2

LUBRICATION
Make of compressor lubricant: Argon
When should motor be oiled: Semi-annually

MOTOR
Make of motor: Century
Type of motor: Repulsion-Induction
Method of starting: Direct
How adapted to odd frequency: Change motor
What additional cost is entailed: $3.00 to $9.00
How adapted to direct current: Change motor
What additional cost is entailed: $6.00 to $10.00
Type of wire or cable used: Metal sheathed flexible cable

CONTROL
Make of control: General Electric or Penn
Type of control: Temperature
Temperature regulation method: Manual regulator
Make of overload cut-out: General Electric or Penn
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Distributor or retailer
Guarantee period on cabinet: One year
Guarantee period on system: Three years
By whom serviced: Minor repairs—dealer or distributor; All others—factory
Are replacement parts sold to independent service companies: No

Frigidaire

FRIGIDAIRE CORP.
Dayton, Ohio

Model or Catalog No.	ML-6	ML-5	ML-4	W-12	W-10	W-8	W-6	W-5	W-4	W-3
CABINET SPECIFICATIONS										
Overall dimensions, including hardware										
Height (inches)	62⅝	54¼	53⅝	66½	66½	61¾	65¼	62⅜	54¼	53⅜
Width (inches)	28½	26¼	24	46½	37¼	35¾	31¾	28½	26¼	24
Depth (inches)	24½	23⅜	19¾	28½	28½	28½	25	25	23⅞	20¼
Thickness of insulation										
Top of cabinet (inches)	1⅞	1½	1¼	2½	2½	2½	3	2½	2	1¾
Sides of cabinet (inches)	2	1⅞	1¼	2½	2½	2½	3	3	2	1¾
Bottom of cabinet (inches)	2½	1¾	1¼	2½	2½	2½	3½	3	2	1¾
Inside dimensions of cabinet liner										
Height (inches)	33⅞	27¼	28½	35⅜	35⅜	30¾	34⅜	32¾	26⅛	27⅛
Width (inches)	23¼	21⅞	20¼	39⅛	30⅛	28½	23⅜	20¼	20½	19
Depth (inches)	17½	17¼	14⅛	19¾	19¾	19¾	16⅝	16½	16⅝	13⅜
Thickness of exterior metal (gauge)	20	20	20	20	20	20	20	20	20	20
Thickness of interior metal (gauge)	18	18	20	18	18	18	18	18	20	20
Number of refrigerator doors	1	1	1	2	2	2	1	1	1	1
STORAGE CAPACITY										
Gross food storage capacity (cu. ft.)	7.7	6.0	4.8	16.0	12.3	10.0	7.8	6.4	5.3	4.1
Net food storage (cu. ft.) (Nema rating)	6.6	5.0	4.0	13.1	10.3	8.1	6.6	5.2	4.1	3.2
Number of shelves	5	4	4	8	8	6	5	5	4	4
Total shelf area (sq. ft.) (Nema rating)	13.2	10.2	8.7	24.7	19.9	15.0	14.5	11.5	9.8	6.9
Greatest distance between any two shelves	10¼	10¼	12¼	10⅜	10⅜	10¾	11	10	10	12
Shortest distance between any two shelves	4⅛	4	4	5½	5½	6⅛	5	4	4⅜	4
ICE CUBE TRAYS										
Number of ice cube trays	2	2	2	4	3	3	3	3	2	2
Inside dimensions of trays (inches)										
Length (at top of tray)	11¼	11¼	8⅛	12⅞	12⅞	12⅞	11⅞	11⅞	8⅛	8⅛
Width (at top of tray)	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞
Depth	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞
Number of cubes produced at one freezing	42	42	30	96	72	72	63	63	30	30
Weight of ice cubes produced (lbs.)	6	6	4	13½	10⅛	10⅛	9	9	4	4
COMPRESSOR SPECIFICATIONS										
Bore (inches)	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Stroke (inches)	1-7/16	1-7/16	1-7/16	1-7/16	1-7/16	1-7/16	1-7/16	1-7/16	1-7/16	1-7/16
Standard speed (rpm)	375	375	375	575	475	475	475	375	375	375
Number of cylinders	2	2	2	2	2	2	2	2	2	2
Compressor capacity (lbs.) (ASRE rating)	145	145	120	222	185	185	185	145	145	120
Motor size (hp.)	1-5	1-5	1-6	1-3	1-4	1-4	1-4	1-5	1-5	1-6
Standard motor speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Quantity of refrigerant in system (lbs.)	4¾	4¾	3¾	11½	10	10	5¾	4¾	3¾	3¾
Quantity of lubricant in system	2 lbs.	2 lbs.	2 lbs.	3 lbs.	3 lbs.	3 lbs.	2¼ lbs.	2 lbs.	2 lbs.	2 lbs.
WEIGHT										
Net weight of complete refrigerator (lbs.)	398	337	300	830	745	673	600	523	421	363
Total shipping weight (lbs.)	499	438	401	1024	861	787	697	621	494	433
PRICE										
F. o. b. factory price	$175	150	130	420	360	300	225	200	175	160

CABINET MATERIALS
Make of cabinet: Frigidaire
Material used for exterior: Metal
Make of exterior metal: Armco
Material used for frame: Wood, metal reinforced
Make of interior metal: Armco
Finish of shelves: Tinned

INSULATION
Make of insulation: Porcelain models—Rock Cork
Nature of insulating material: Mineral
Bulk or formed slabs: Formed slabs
How is insulation waterproofed: Odorless asphalt

FINISH
Cabinet finish (exterior): W line—porcelain; ML line—lacquer
Make of exterior finish: Porcelain — Frigidaire; lacquer—Duco
Colors offered as standard: White
Colors offered on special order: None
Cabinet finish (interior): Porcelain
Make of interior finish: Frigidaire

HARDWARE
Make of hardware: Ternstedt
Process of manufacture: W-line—cast; ML-line—stamped
Basic metal of hardware: W-line — bronze; ML-line—brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Wood
Material used for gasket: Rubber

EVAPORATOR
Make of evaporator: Frigidaire
Evaporator construction: Tubular
Metal used for evaporator: Brass & copper
Type of refrigerant control: Low side float
Make of expansion valve: None
Make of brine tank: None
Solution used for brine: None
Type and make of trays: W-5, W-6, W-8, W-10 & W-12—aluminum & quickube; all others—aluminum
Dimensions of ice cube (inches): 1-9/16x1-9/16x1¾

SPECIAL FEATURES
W line—Hydrator

COMPRESSOR
Make of compressor: Frigidaire
Type of system: Conventional
Type of compressor: Reciprocating
Compressor drive: Belt
Type and make of shaft seal: Bellows with Durex bearing
Location of compressor: Below

CONDENSER
Make of condenser: Frigidaire
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

REFRIGERANT
Refrigerant used: Sulphur Dioxide
Chemical formula: SO_2

LUBRICATION
Make of compressor lubricant: Frigidaire
When should motor be oiled: Bi-annually

MOTOR
Make of motor: Delco
Type of motor: Repulsion-Induction
Method of starting: Direct
How adapted to odd frequency: Change motor
What additional cost is entailed: None
How adapted to direct current: Change motor
What additional cost is entailed: None
Type of wire or cable used: Rubber covered and metal sheathed
Make of wire or cable used: General Cable

CONTROL
Make of control: Frigidaire
Type of control: Pressure
Temperature regulation method: Manual regulator
Make of overload cut-out: Frigidaire
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Manufacturer
Guarantee period on cabinet: Lacquer finish—one year; porcelain—three years
Guarantee period on system: Three years
By whom serviced: Dealer
Are replacement parts sold to independent service companies: No

Lectric-Ice

UNIFLOW MFG. CO.
Erie, Pa.

Model or Catalog No.	42D	42P	52D	52P	63D	63P	84D	84P	105P	C-45E	C-45D	C-60D
CABINET SPECIFICATIONS												
Overall dimensions, including hardware												
Height (inches)	56	56	59	59	59	59	59	59	59	53	53	55
Width (inches)	26	26	26	26	28½	28½	32½	32½	38½	22¾	22¾	25½
Depth (inches)	23	23	23	23	25	25	26	26	26	19	19	20
Thickness of insulation												
Top of cabinet (inches)	3	3	3	3	3	3	3	3	4	2½	2½	2½
Sides of cabinet (inches)	3	3	3	3	3	3	3	3	3	2	2	2
Bottom of cabinet (inches)	3	3	3	3	3	3	3	3	4	2½	2½	2½
Inside dimensions of cabinet liner												
Height (inches)	24¾	24¾	29¼	29¼	29¼	29¼	29¼	29¼	29¼	27⅞	27⅞	27½
Width (inches)	18½	18½	18¼	18¼	21	21	25¼	25¼	31¼	18¼	18¼	21
Depth (inches)	16½	16½	16½	16½	18	18	19	19	18¾	15¼	15¼	17¼
Thickness of exterior metal (gauge)	20	20	20	20	20	20	20	20	20	20	20	20
Thickness of interior metal (gauge)	19	19	19	.19	19	19	19	19	19	19	19	19
Number of refrigerator doors	1	1	1	1	1	1	1	1	2	1	1	1
STORAGE CAPACITY												
Gross food storage capacity (cu. ft.)	4.5	4.5	5.5	5.5	6.7	6.7	8.0	8.0	10.2	4.5	4.5	6.0
Net food storage (cu. ft.) (Nema rating)	4.0	4.0	5.0	5.0	6.0	6.0	7.0	7.0	9.0	3.8	3.8	5.3
Number of shelves	3	3	4	4	4	4	4	4	4	3	3	4
Total shelf area (sq. ft.) (Nema rating)	7.5	7.5	9.5	9.5	12.0	12.0	13.5	13.5	16.5	6.7	6.7	11.4
Greatest distance between any two shelves	7	7	6½	6½	6½	6½	6½	6½	6½	8¾	8¾	6¼
Shortest distance between any two shelves	6	6	5¾	5¾	5⅜	5⅜	5¾	5¾	5¾	6	6	5
ICE CUBE TRAYS												
Number of ice cube trays	2	2	2	2	3	3	4	4	5	2	2	2
Inside dimensions of trays (inches)												
Length (at top of tray)	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜
Width (at top of tray)	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛
Depth	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	56	56	56	56	84	84	112	112	140	56	56	56
Weight of ice cubes produced (lbs.)	4	4	4	4	6	6	8	8	10	4	4	4
COMPRESSOR SPECIFICATIONS												
Bore (inches)	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝
Stroke (inches)	1	1	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1	1	1
Standard speed (rpm)	550	550	375	375	375	375	450	450	450	550	550	550
Number of cylinders	1	1	1	1	1	1	1	1	1	1	1	1
Compressor capacity (lbs.) (ASRE rating)	75	75	110	110	110	110	150	150	150	75	75	75
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-5	1-5	1-5	1-6	1-6	1-6
Standard motor speed (rpm)	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725
Quantity of refrigerant in system (lbs.)	1¼	1¼	1¼	1¼	1¼	1¼	1½	1½	1½	1¼	1¼	1¼
Quantity of lubricant in system (grams)	250	250	750	750	750	750	750	750	750	250	250	250
WEIGHT												
Net weight of complete refrigerator (lbs.)												
Total shipping weight (lbs.)	310	335	321	347	374	399	410	450	530	258	290	330
PRICE												
F. o. b. factory price	$169.50	185.00	198.00	215.00	220.00	250.00	260.00	290.00	365.00	99.50	129.50	139.50

CABINET MATERIALS
Make of cabinet: Models C-45D, C-45E, & C-60D—Erie Art Metal; all others—Niagara
Material used for exterior: Metal
Make of exterior metal: Niagara—Armco
Material used for frame: Wood
Make of interior metal: Armco
Finish of shelves: Tinned

INSULATION
Make of insulation: Niagara—Dry-Zero; all others—Temlok
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs
How is insulation waterproofed: Tarred cloth & paper

FINISH
Cabinet finish (exterior): P models—porcelain; all others—lacquer
Colors offered as standard: White
Cabinet finish (interior): E models—enamel; others—porcelain

HARDWARE
Make of hardware: Models C-45D, C-45E & C-60D—Winters & Crampton; others—Grand Rapids Brass
Process of manufacture: Grand Rapids Brass—Stamped Winters & Crampton—stamped & cast
Basic metal of hardware: Brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Niagara—Bakelite; all others—wood
Material used for gasket: Rubber

COMPRESSOR
Make of compressor: Uniflow
Type of system: Conventional
Type of compressor: Reciprocating
Compressor drive: Belt
Type and make of shaft seal: Bellows
Location of compressor: Below

EVAPORATOR
Make of evaporator: Uniflow
Evaporator construction: Tubular
Metal used for evaporator: Copper
Type of refrigerant control: Expansion valve
Make of expansion valve: American Radiator
Type and make of trays: Hoosier
Dimensions of ice cube (inches): 1¼x1¼x1½

CONDENSER
Make of condenser: Fedders
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

REFRIGERANT
Refrigerant used: Sulphur Dioxide
Trade name: Ansul
Chemical formula: SO_2

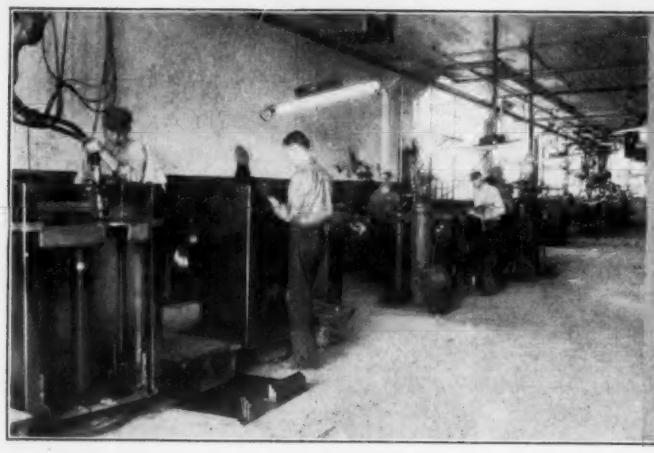
LUBRICATION
Make of compressor lubricant: No. 3—Suniso
How often should motor be oiled: Semi-annually

MOTOR
Make of motor: Delco
Type of motor: Repulsion-Induction
Method of starting: Direct
How adapted to odd frequency: Change motor
What additional cost is entailed: Extra cost of motor
How adapted to direct current: Change motor
What additional cost is entailed: 1-6 hp.—$2.00; 1-5 hp.—$3.00
Type of wire or cable used: Rubber covered
Make of wire or cable used: General Electric

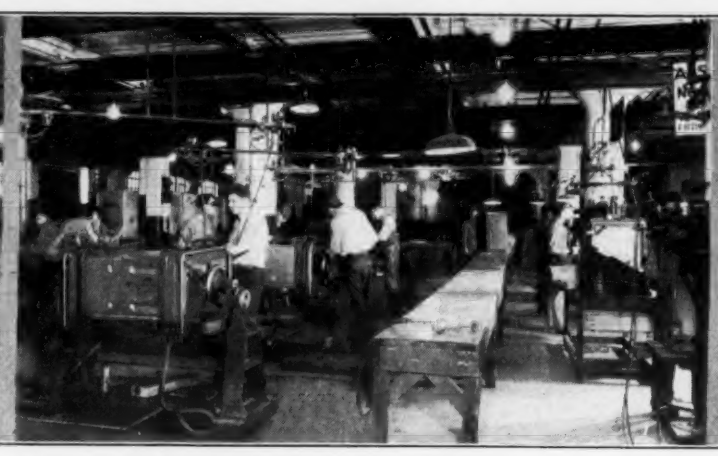
CONTROL
Make of control: Ranco
Type of control: Temperature
Temperature regulation method: Manual regulator
Make of overload cut-out: Ranco
How is defrosting accomplished: Models C-45D, C-45E & C-60D—shut down unit; all others—automatic

POLICY
Who determintes retail price: Manufacturer
Guarantee period on cabinet: One year
Guarantee period on system: Three years
By whom serviced: Dealer & distributor
Are replacement parts sold to independent service companies: Yes

Briggs Devises Special Welding Tools for Cabinet Production



Where Briggs welds the upper machine compartment into the cabinet using a portable "gun-type" electric welder.



Workmen using the special gas welding fixtures to fasten tops and bottoms to the steel cabinet liners.

Part of the metal finishing division where the roughness of welds is removed before the lacquer is applied.

Automobile Body Practices Adapted To Refrigerator Manufacture

By John T. Schaefer

DETROIT—Five stories of Briggs Mfg. Co.'s LeBaron plant here, where once were made automobile bodies for Ford, Graham, Hudson, and other cars, have recently been re-tooled for the establishment of straight-line production of Briggs all-steel refrigerator cabinets. One of several Briggs plants in Detroit, the LeBaron plant gets its name from the custom-built LeBaron auto bodies which are manufactured in it.

Both experience and equipment developed for auto body production, in metal bending and forming, steel welding, metal finishing, and assembling operations, have been adapted to the somewhat similar problems of manufacturing steel refrigerator cabinets, engineers of the company show.

Three sides of the exterior frame are formed with one piece of steel, with the floor, cabinet bottom, legs, and upper compressor compartment fabricated along separate production lines which feed the main line at suitable intervals.

An important factor in systematizing the cabinet production line is a continuous overhead chain conveyor, 4,000 ft. long, which conducts the steel parts to and from their respective operations, and up to the final assemblage of cabinets on a belt type conveyor.

Cabinet stampings are made in Briggs' Mack Avenue plant and delivered right to the production line in the LeBaron works.

First operations in the LeBaron plant, after examination and inspection of suppliers' materials, are piercing of holes in the outer shell for attaching legs and top machine compartment, formation of flanges, notching the shell for corners, and bending of the outer shell to form its sides. These are done on the ground floor (where the sheet steel is received), with metal shaping machines adapted from automobile body work.

One of the most difficult problems in production technic was the welding of the food compartment, one of the requirements being that all interior corners should be rounded to a ½-in. radius, Bertram T. Skelley, factory manager reports.

It was finally solved by designing a special gas welding fixture with which a workman can apply a seam weld along the joint formed by the butt edges of a liner's sides and top or bottom, just beyond the curve of the interior rounded corner. The operation of this machine is pictured in the middle illustration above.

Fastening the bottom of the cabinet to the exterior shell, and attaching the sub-assembly of the upper compressor compartment was another different welding problem because the various positions of the different joints required the use of a portable welder. The portable "gun-type" welder appearing in the picture above to the left was devised. Its chief feature is its flexibility in being able to weld together metals of two different thicknesses.

When the structural rigidity of the outer shell has been fixed by assembling of its various parts, a jig is used to determine the position of the hinges, and the holes are drilled and tapped.

Auto body experience is again called into play in the metal finishing division where workmen employ portable and disc grinders to smooth off welded joints and uneven spots. An inspector with a "metal mit" on his hand carefully feels portions of the cabinet that are apt to be rough.

The shell is next ready for its trip on the overhead conveyor through the metal cleaning and lacquering operations. Each three racks of the conveyor carries enough metal parts for a complete cabinet—a top, inner liner, exterior shell, a set of legs, etc.

The conveyor then conducts its load through spray booths where a high-pressure spray of metal cleaning solution is applied, followed by two hot water sprays. Emerging from these baths, the pieces are given an acid wash by a woman operator, blown clean by air pressure, and wiped dry by another worker.

The conveyor now starts its tortuous trip through a series of bake ovens and finish spray booths. The first oven is traversed in about 20 minutes at a temperature of 140° F. for the purpose of drying the metal thoroughly. Then the priming coat is applied in a spray booth, and is baked at 350 to 375° F. during its two-hour trip through another oven.

Following an inspection under high-intensity lamps to see that every part of the metal has been covered with the base primer, the parts move to a second spray booth where they get their first coat of white lacquer. A ½-hour bake at 150° F. dries this coat, and the last lacquer application is made—to be air-dried in a long winding passage back and forth across a room devoted to drying only.

Up to the fifth floor the conveyor goes while the last coat of lacquer is still setting. On this floor may be seen the large oil-burning ovens which supply heat to the various baking processes.

Here the final assembling of completed refrigerator cabinets starts. Girls fasten the legs onto the shell with screws, others seal the top and bottom of the shell with hydrolene, then a squad of men installs the Celotex insulation. Kapok fibre is inserted in air pockets, and the insulation proper is sealed with hydrolene as the inner liner is put in place.

At this point a sub-assembly line supplies doors to be screwed in place and fitted. Along this line are workers placing a package of Balsam Wool, another of Dry-Zero, and a sheet of Arborite insulation in the door. Rubber gaskets are cut, fitted, and fastened to the inside of the door.

Crating the cabinet, packaging the top and shelves, final cleaning, and inspection are done along a belt-type conveyor which conducts the cabinets along a row of windows on the fourth floor. Crates are lastly loaded on an elevator and taken down to the shipping department.

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BUNDYWELD TUBING

Pioneer Engineer Recalls Early Days In Development of Refrigeration

By John Lewis
Vice President, Gibson Electric Refrigerator Corp.

IN the early days, the city of Buffalo was the center of the refrigeration industry, with the old-fashioned lift-lid boxes in manufacture.

Back in the "Seventies" George Bendt learned that an important principle in refrigerator making is the fact that cold air will fall, so he designed a box with flues on each side to take advantage of this discovery.

About the same time, J. Hyde Fisher of Chicago invented the first *dry air* refrigerator, exhibiting a model during the 1876 centennial in Philadelphia. It aroused much comment. He kept fruit and fish for days in the dry air box, and people could not understand why the box remained dry inside.

A few of these dry air refrigerators were made in Chicago and then in 1876, the Alaska Refrigerator Co. of Michigan City began making the dry air boxes. Shortly afterwards (in 1877) the R T. Hambrook Mfg. Co. of Chicago was organized, and started to make refrigerators. The patents under which the company worked were signed May 28, 1878.

Editor's note: Mr. Lewis was a witness to the signing of these patents.

Later the Belding brothers of Belding, Mich., purchased the refrigerator end of the Hambrook Co. In 1884 they started the Belding Mfg. Co. In 1885, Brinton F. Hall joined the organization, coming west as a young fellow from New England, and the company later took the name of Belding-Hall.

The Belding Co. in 1886 was the first to put aprons on its refrigerators to conceal the drip pan.

Fifty years ago, refrigerators were either lined with zinc or wood, with galvanized iron being used in the ice chambers. Today no zinc refrigerators are made.

There was considerable interest attached to the first white enamel refrigerators. A man on Hester St., New York City, whose name is lost to posterity, had the bright idea of buying up rejected refrigerators from large New York stores in 1892 and 1893.

He refinished these boxes with white enamel in the provision compartments. Aluminum paint was used on the ice chamber. This experiment started the vogue for enamel boxes and out of this trend came the porcelain boxes of the present day.

I was with the Hambrook Co. in 1877, later with the Belding Mfg. Co., and then with the Ranney Refrigerator Co. of Greenville, Mich., which was organized in 1892, and continues today as one of the pioneer firms in active operation.

In 1908 we organized the Gibson company in Greenville, Mich., where I have since witnessed the development and manufacture of many Gibson refrigerators.

It was in 1920 that our first porcelain enameling plant was established. At first only interiors were finished in porcelain, as we had found that porcelain enamel was the most suitable to stand up under continued use of these parts.

Previous to the establishment of our enameling plant we made thousands of boxes in which opalite glass was used. The provision compartment was lined with opalite glass, held in position by means of highly polished metal strips. This broken glass was replaceable.

Engineers Attack Special Privileges for F-12 Refrigerant

Fremont Wilson Leads Opposition

The following letter and its attached exhibits from Fremont Wilson, consulting engineer of New York City, was sent to Electric Refrigeration News, and has been widely circulated among engineers, underwriters, and the technical press.

It contains exhibits signed by Fred Nolde, secretary of the Refrigerating Machinery Manufacturers Association; Dr. J. B. Churchill, chemical engineer of New York City, and consulting engineer for Icemaster, Inc.; Glenn Muffly, president of the American Society of Refrigerating Engineers, code and statistical representative of the Refrigeration Division of the National Electrical Manufacturers Association, and consulting engineer for Copeland Products, Inc.; Harry D. Edwards, of the Carbide & Carbon Chemicals Corp. and acting chairman of the Refrigeration Code committee of the American Standards Association; E. T. Williams, consulting engineer of Servel, Inc.; Dr. William R. Hainsworth, director of laboratories for Electrolux Sales, Inc.; Thomas Larkin, acting deputy chief, John F. Dixon, inspector of combustibles, and C. K. Michaels, engineering inspector of the New York City Fire Department; and other engineers.

The letter and its exhibits include practically all the material which has been made public by the engineers who are attacking F-12. Requests of Frigidaire Corp. and Kinetic Chemicals, Inc., that F-12 be exempted from the restrictions on refrigerants as found in refrigeration safety codes which have been adopted by many cities, have been persistently opposed by an influential group of engineers. The following material summarizes the arguments which they have been presenting.

Fremont Wilson, Consulting Engineer,
50 Church Street, New York, N. Y.
May 28, 1932.

Subject—Dichloro-Difluoro-Methane "in re" Car Cooling System.
Editor Literary Digest
354-60 Fourth Avenue
New York, N. Y.

In your May 21st number there appears an article titled "Car Cooling System," stating in the latter part that "The use of Freon, chemically known as dichloro-difluoromethane is a marked improvement in railroad air conditioning. The hazards to health from exposure to it are remote, and available data indicate it is in a class with the practically non-toxic gases."

(a) To this statement the writer takes **decided exception** particularly as to "available data indicate, etc." **On the contrary, available data clearly indicate** that the **"decomposition products** under **fire** conditions are irritating and toxic when inhaled"—see exhibit No. 1 (enclosed), being report of the Underwriters Laboratories MH-2256, dated March 6, 1931.

(b) Again we find, in exhibit No. 2 (enclosed) the following in addition to "data available" in exhibit No. 1—"In contact with flame or hot metal surfaces (dull red heat 550° C) the **decomposition products** are **corrosive, irritating** and **toxic** when inhaled." **(Boldface inserted).**

(c) What **about this gas** when, and if, a train is wrecked? Is it **safe** or is it a **known hazard** to **life,** and so proven by **readily "available data?"**

(d) Further **"available data"** are contained in the report dated Nov. 12, 1931, of the "Code Interpretations Committee of the American Standards Association," see exhibit No. 3 (enclosed), and note the practical prohibition of this gas for household refrigeration purposes—page 2, paragraph 118.

(e) Then again, more **"available data;"** see copy of resolution before the Board of Hazardous Trades of the New York Fire Department, dated Dec. 15, 1931, exhibit No. 4 (enclosed). This resolution is intended to prohibit the use of **this** gas, when and wherever open flames are, or may be.

(f) A copy of a very masterly presentation of this subject of the dangers from "decomposition products" of dichloro-difluoro-methane (Freon) is herewith enclosed. A perusal of this document is well worth the time given it by any understanding mind.

(g) Finally, I quote from the remarks made by Chief Inspector McGonegal, Washington, D. C., at a committee meeting held there on April 18, 1932.

"If a thing is improper from a health standpoint, it should **not** be **either made** or **installed, regardless of** price; that there is no price on human life"—"if it is **wrong,** it should **not be countenanced."**

I hope you will find space to say "data now made available indicates that you were unintentionally not telling the **whole** truth re dichloro-difluoro-methane." Furthermore, it will soon be demonstrated that "Car Cooling" is to be available **without using any refrigerant.**

FREMONT WILSON, C. E.
Fellow & Life member of American Inst. of E. E. Member of the American Inst. of R. E. Associate of the American Society S. E.

Copies to—Technical Press, Engineers and Underwriters.

EXHIBIT No. 1--UNDERWRITERS

RECOMMENDATION

To the Fire Council of Underwriters' Laboratories:

We recommend promulgation of the following notice to subscribers and the action indicated thereby:

Guide No. 540,118, March 6, 1931—Laboratories' File MH-2256.

Kinetic Chemicals, Inc., Mfr., Wilmington, Del.

Refrigerant

A refrigerant consisting of dichloro-difluoro-methane of a high degree of purity. It is shipped compressed to a liquid in steel drums under a pressure of about 75 lbs. per sq. in. when at 70° F.

Dichloro-difluoro-methane is judged to be nonflammable and noncombustible.

Warning: Although dichloro-difluoro-methane classifies as practically nontoxic, the decomposition products under fire conditions are irritating and toxic when inhaled and may impede the work of firemen. Fire and casualty underwriting authorities and fire departments should be consulted by prospective users with regard to the necessary precautions to be taken in the storage and use of this material.

Marking: "F-12" on cylinders.

LISTED—Fire.

REEXAMINATION SERVICE.

See description of Reexamination Service on guide card.

Tests by: R. E. Dufour, M. Peterson.

Report by: R. E. Dufour, Asst. Chem. Engr.

Reviewed by: A. F. Matson, Asso. Chem. Engr.; A. H. Nuckolls, Chemical Engineer.

Submitted: A. H. Nuckolls, Chemical Engineer.

EXHIBIT No. 2

RECOMMENDATION

To the Fire Council of Underwriters' Laboratories:

We recommend promulgation of the following notice to subscribers and the action indicated thereby:

Guide No. 540,118, Oct. 10, 1931—Laboratories' File MH2256.

Kinetic Chemicals, Inc., Mfr., Wilmington, Del.

Refrigerant

A refrigerant consisting of dichloro-difluoro-methane of a high degree of purity. It is shipped compressed to a liquid in steel drums under a pressure of about 75 lbs. per sq. in. when at 70° F.

Dichloro-difluoro-methane is nonflammable and noncombustible.

Dichloro-difluoro-methane itself is stable, nonirritating and nontoxic, but under fire conditions or where appreciable quantities of dichloro-difluoro-methane come in contact with flame or hot metal surfaces (dull red heat, about 550° C), the decomposition products are corrosive, irritating and toxic when inhaled, but do not burn or form explosive mixtures with air. The irritating character of the decomposition products gives definite warning and acts to prevent prolonged exposure, but where prompt exit is not made particularly from closed rooms, life may be endangered. The decomposition products are readily dissolved by water from automatic sprinklers or hose streams.

Marking: "Kinetic No. 12" on cylinders.

LISTED—FIRE.

REEXAMINATION SERVICE.

See description of Reexamination Service on guide card.

Tested by: R. E. Dufour, M. Peterson.

Reported by: A. H. Nuckolls, chemical engineer; A. F. Matson, associate chemical engineer; R. E. Dufour, assistant chemical engineer.

Reviewed by: A. H. Nuckolls, chemical engineer.

Submitted: A. H. Nuckolls, chemical engineer.

The foregoing recommendation has been accepted and the action proposed therein has been taken. March 23, 1931.

Underwriters' Laboratories,
D. B. Anderson,
Secretary.

A.S.A. CODE COMMITTEE

Nov. 12, 1931.

Exhibit No. 3

Mr. R. E. Matthews, Chairman,
A. S. A. Safety Code for Mechanical Refrigeration—B-9,
Leonia, N. J.

The Code Interpretations Committee has been requested to incorporate in the Safety Code, the necessary rules for the construction, location and operation of refrigerating machines using either Methyl Formate or Dichlorodifluoromethane as the refrigerant.

The Interpretations Committee considers that such rules can only be incorporated in the Code by the Sectional Committee. The Interpretations Committee is therefore, referring the inclusion of rules for the use of Methyl Formate and Dichlorodifluoromethane to the Sectional Committee, action to be taken at your direction.

The Interpretations Committee has been furnished with considerable information regarding the properties of the chemicals proposed for use as refrigerants. This information is briefly condensed as follows:

Methyl Formate:

Chemical Symbol $C_2H_4O_2$. Exists at atmospheric pressure as a colorless liquid giving off an agreeable odor. Boiling point 31.75° C. or about 90° F. Specific Gravity of liquid 0.975* at 68° F. The vapor pressure at 150° F. is approximately 22.3* lbs. gauge. When vaporized and mixed with air it will burn in concentrations of from 4.5 to 20%. Maximum explosure pressure is reached at a concentration of about 17.5%.** The vapors are toxic to about the same extent as those from Methyl Chloride.***

* E. W. Roessler,
** A. R. Weckel,
*** Bureau of Mines Report No. 937-B and Health Bulletin No. 185.

Dichlorodifluoromethane:

Chemical Symbol CCl_2F_2. Exists as a gas at atmospheric pressure. The liquid is clear water white and boils at -31.6° F. or -29.8° C. Vapor pressure at 150° F. approximately 240 lbs. gauge. The vapor has a slight agreeable odor and is nonirritant and nonflammable. The vapors will extinguish methane flames as efficiently as carbontetrachloride.* Both the vapor and liquid decompose in the presence of a flame into irritant products. Complete physical properties of the chemical when used as a refrierant are given in the American Society of Refrigerating Engineers Circular No. 12—1931.

* Bureau of Mines Report RI-3042—October, 1930.

It is suggested that these two chemicals be incorporated in the Safety Code for Mechanical Refrigeration by means of the following modifications and additions thereto:

Paragraph No. 113

Now reading as follows:

FLAMMABLE REFRIGERANT: Any refrigerant which will burn when mixed with air, such as ethyl chloride, methyl chloride and the hydrocarbons.

To be changed to read as follows:

FLAMMABLE REFRIGERANT: Any refrigerant which will burn when mixed with air, such as ethyl chloride, methyl chloride, methyl formate and the hydrocarbons.

Paragraph No. 118

Now reading as follows:

IRRITANT REFRIGERANT: Any refrigerant which has an irritating effect on the eyes, nose, throat, or lungs, as ammonia and sulphur dioxide.

To be changed to read as follows:

(a) Any refrigerant having a boiling point of 80° F. or lower at atmospheric pressure and which has an irritating effect on the eyes, nose, throat, or lungs, as ammonia and sulphur dioxide, or one with a boiling point as above which will break down in the presence of a flame and form a gas or vapor that is irritant, as above defined, as does dichlorodifluoromethane.

(b) In a building constructed of noncombustible materials, which is not piped for gas or liquid fuel in which no gas burner, fire box or other flame-producing apparatus is installed, dichlorodifluoromethane is defined as a nonirritant refrigerant.

Paragraph No. 370

Add to the table, the following:

Methyl Formate	$C_2H_4O_2$	30 15
Dichlorodifluoromethane	CCl_2F_2	240 120

Paragraph No. 384

Now reading as follows:

All flammable or irritant refrigerant withdrawn from any system shall be discharged into a suitable absorbent or container.

Have added thereto:

Dichlorodifluoromethane may be discharged into the atmosphere provided the discharged refrigerant cannot come into contact with a flame.

(Signed) Fred Nolde,
J. B. Churchill,
Glenn Muffly.

Mr. George Bright who was not able to be present when the proposed modifications to the Code were formulated, questioned the right of the Committee on Interpretations and Exceptions to make a recommendation to the Sectional Committee and raises the following two specific objections:

(a) To the addition of part (B) of paragraph 118 stating that it is too ambiguous.

(b) To the proposed addition to the para-384, as no protection is provided in the case of a fire.

The method of procedure has been carefully checked and found to be in accordance with American Standards Association practices.

The writer has refrained from expressing an opinion regarding the suggested Code changes due to the fact that he is connected with a company manufacturing a refrigerant and the propriety of his taking part in making of rules for the use of a possibly competitive product might be questioned.

Yours truly,
H. D. EDWARDS,
Chairman.

N. Y. FIRE DEPARTMENT

Exhibit No. 4

Dec. 15, 1931.

RESOLVED:

That in accordance with Section 216 (c) the refrigerant dichlorodifluoromethane, commonly known as F-12, be permitted for use in New York City, with the following provisions, namely:

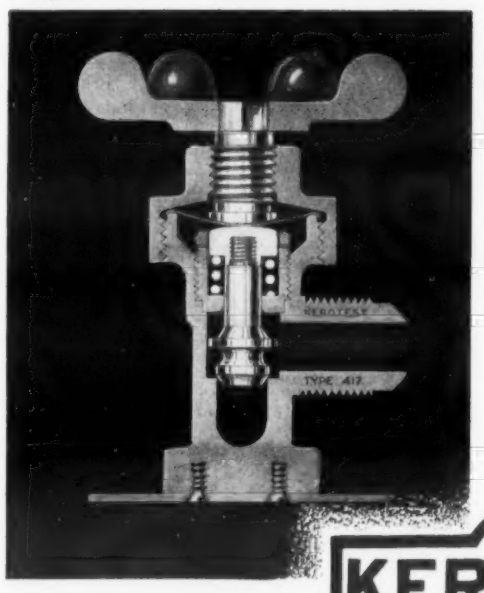
1. The refrigerant F-12 is classified as irritant within the meaning of the refrigerating code when used in a room in which is located an open flame, or device for producing or employing such open flame; as per Art. 1, Sec. 1, Subdivision 33-(e).

2. The direct method of refrigeration is restricted (when F-12 is used as the refrigerant) to buildings or parts of buildings so permitted by Sec. 219-(b).

3. No refrigerating system employing F-12

(Continued on Page 12, Column 1)

Good valves and fittings reduce the upkeep of those 3 year guarantees



KEROTEST
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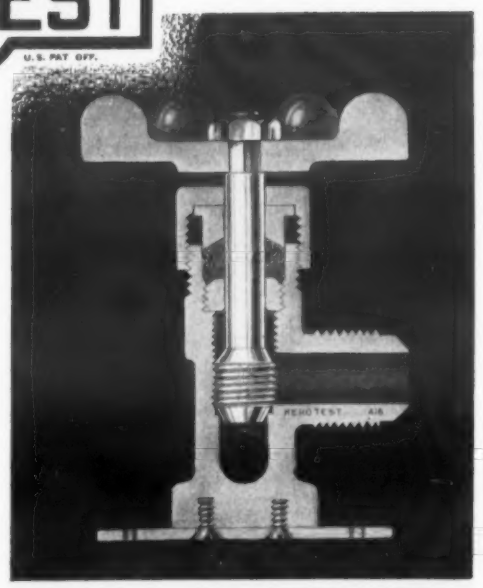

Every single part of a modern refrigerator must be 100 per cent to merit a three year guarantee. That is why you can rely implicitly on all Kerotest Refrigerator Valves to do their full share in maintaining the highest standard of refrigerator service.

Every Kerotest Valve is made to sell on a performance basis, not price,—every valve is individually tested and inspected,—the two styles of valves illustrated herewith meet the full approval of the Underwriters Laboratories.

Whatever may be your requirements in refrigerator valves you can always rely on KEROTEST—a pioneer manufacturer of quality valves exclusively.

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Leonard, Sanitary and O'Keefe & Merritt Specifications

Leonard Electric

LEONARD REFRIGERATOR CO.
14256 Plymouth Rd., Detroit, Mich.

Model or Catalog No.	A450	L400	L450	L550	L650	L750	PA450	PL550	PL750
CABINET SPECIFICATIONS									
Overall dimensions, including hardware									
Height (inches)	49⅝	49⅝	52¼	53⅝	54⅞	58⅞	....	53¾	58⅞
Width (inches)	24	26¼	26¼	28⅝	31¾	31¾	....	28⅝	31¾
Depth (inches)	23¾	24½	24½	26⅛	26⅛	26⅛	....	26⅛	26⅛
Thickness of insulation									
Top of cabinet (inches)	2½	2½	2½	2½	2½	2½	2½	2½	2½
Sides of cabinet (inches)	2½	2½	2½	2½	2½	2½	2½	2½	2½
Bottom of cabinet (inches)	2½	2½	2½	2½	2½	2½	2½	2½	2½
Inside dimensions of cabinet liner									
Height (inches)									
Width (inches)									
Depth (inches)									
Thickness of exterior metal (gauge)									
Thickness of interior metal (gauge)									
Number of refrigerator doors	1	1	1	1	1	1	1	1	1
STORAGE CAPACITY									
Gross food storage capacity (cu. ft.)	5.10	4.55	5.10	6.28	7.48	8.55	4.55	6.28	8.55
Net food storage (cu. ft.) (Nema rating)	4.46	4.00	4.46	5.57	6.65	7.52	4.46	5.57	7.52
Number of shelves	4	3	4	4	4	5	4	4	5
Total shelf area (sq. ft.) (Nema rating)	9.34	8.21	9.34	11.70	13.73	16.98	9.34	11.70	16.98
Greatest distance between any two shelves									
Shortest distance between any two shelves									
ICE CUBE TRAYS									
Number of ice cube trays	3	2	3	3	3	3	3	3	3
Inside dimensions of trays (inches)									
Length (at top of tray)									
Width (at top of tray)									
Depth									
Number of cubes produced at one freezing	63	42	63	63	84	108	63	63	108
Weight of ice cubes produced (lbs.)	5.1	3.4	5.1	5.1	6.8	11.0	5.1	5.1	11.0
COMPRESSOR SPECIFICATIONS									
Compressor capacity (lbs.) (ASRE rating)	93.6	93.6	93.6	112.8	112.8	163.2	93.6	112.8	163.2
Motor size (hp.)	1-10	1-10	1-10	1-6	1-6	1-5	1-10	1-6	1-5
Quantity of refrigerant in system (lbs.)	3.06	2.75	3.06	3.06	3.25	3.375	3.06	3.06	3.375
Quantity of lubricant in system	1 lb	1 lb.	1 lb.	1 lb.	1 lb.	1⅝ lbs.	1 lb.	1 lb.	1⅝ lbs.
WEIGHT									
Total shipping weight (lbs.)	345	350	356	401	432	471	375	434	512
PRICE									
Installed price	$149.50	153.50	175.00	193.50	211.75	245.00	195.00	249.50	301.50

CABINET MATERIALS
Make of cabinet: Leonard
Material used for exterior: Steel
Make of exterior metal: Armco
Material used for frame: Wood
Make of interior metal: Armco
Finish of shelves: Tinned

INSULATION
Make of insulation: Dry-Zero and Celotex
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs

FINISH
Cabinet finish (exterior): PA and PL models—porcelain; all others—lacquer
Colors offered as standard: White
Cabinet finish (interior): Porcelain
Make of interior finish: Leonard

HARDWARE
Make of hardware: Leonard
Process of manufacture: Die cast
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Composition
Material used for gasket: Rubber
Make or brand of gasket:

EVAPORATOR
Make of evaporator: Leonard
Evaporator construction: Shell
Metal used for evaporator: Steel
Type of refrigerant control: High side float
Make of expansion valve: None
Make of brine tank: None
Solution used for brine: None
Type and make of trays: Leonard

COMPRESSOR
Make of compressor: Leonard
Type of system: Conventional
Type of compressor: Reciprocating
Compressor drive: Belt
Type and make of shaft seal: Leonard
Location of compressor: Below

SPECIAL FEATURES: All have Len-a-Door; Porcelain models—interior light, vegetable tray, water cooling tank

CONDENSER
Make of condenser: Leonard
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

REFRIGERANT
Refrigerant used: Sulphur Dioxide
Chemical formula: SO_2

LUBRICATION
Make of compressor lubricant: Leonard
How often should motor be oiled: Annually

MOTOR
Make of motor: Wagner, Delco or Westinghouse
Type of motor:
Method of starting: Direct
How adapted to odd frequency: Change motor
What additional cost is entailed: None
How adapted to direct current: Change motor
What additional cost is entailed: None

CONTROL
Make of control: Ranco
Type of control: Temperature
Temperature regulation method: Manual regulator
Make of overload cut-out: Ranco
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Manufacturer
Guarantee period on cabinet: One year
Guarantee period on system: One year
By whom serviced: Dealer and distributor
Are replacement parts sold to independent service companies: No

Sanitary

SANITARY REFRIGERATOR CO.
Fond du Lac, Wis.

Model or Catalog No.	4	41	51	71	91	477	530	650	810
CABINET SPECIFICATIONS									
Overall dimensions, including hardware									
Height (inches)	52½	52½	58	59½	62	54	58	59¼	58½
Width (inches)	23	23	25¼	34½	34½	24¼	26¼	28½	32¼
Depth (inches)	23½	23½	24½	24½	24½	26	25	26	27½
Thickness of insulation									
Top of cabinet (inches)	2½	2½	3	3	3	2½	3	3	3
Sides of cabinet (inches)	2½	2½	3	3	3	2½	3	3	3
Bottom of cabinet (inches)	2½	2½	3	3	3	2½	3	3	3
Inside dimensions of cabinet liner									
Height (inches)	28½	23½	28¼	27	33¼	25⅝	28½	29¾	29
Width (inches)	17⅜	17⅜	18½	28	28	17¾	18¾	21½	25
Depth (inches)	16	16	16	16	16	18	16½	17½	18¾
Thickness of exterior metal (gauge)	22	22	22	22	22	20	20	20	20
Thickness of interior metal (gauge)	26	20	20	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	2	2	1	1	1	1
STORAGE CAPACITY									
Gross food storage capacity (cu. ft.)	4.1	4.1	5.1	7.1	9.1	4.8	5.3	6.5	8.1
Net food storage (cu. ft.) (Nema rating)	3.4	3.4	4.0	6.0	7.8	3.9	4.4	5.1	6.9
Number of shelves	3	3	3	4	7	3	4	4	4
Total shelf area (sq. ft.) (Nema rating)	7.0	7.0	8.7	10.0	14.5	6.7	8.4	10.4	12.5
Greatest distance between any two shelves	10	10	11¾	9¾	10¼	12½	10¼	13½	12½
Shortest distance between any two shelves	4½	4½	5¾	5½	4½	6	4¾	5	5
ICE CUBE TRAYS									
Number of ice cube trays	2	2	4	3	3	2	2	3	3
Inside dimensions of trays (inches)									
Length (at top of tray)	10¼	10¼	10¼	8½	11⅞	8½	8½	8½	8½
Width (at top of tray)	3⅝	3⅝	3⅝	5¼	5¼	5⅛	5⅛	5⅛	5⅛
Depth	1¼	1¼	1¼	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	42	42	84	77	63	53	56	77	77
Weight of ice cubes produced (lbs.)	3	3	6	6	8-1/3	4	4	6	6
COMPRESSOR SPECIFICATIONS									
Compressor capacity (lbs.) (ASRE rating)	65	75	75	75	120	75	75	75	75
Motor size (hp.)	1-6	1-6	1-6	1-6	1-4	1-6	1-6	1-6	1-6
Quantity of refrigerant in system (lbs.)	3	3	3¼	4½	6	3⅝	3⅝	4½	4½
WEIGHT									
Net weight of complete refrigerator (lbs.)	280	285	345	390	500	295	300	330	375
Total shipping weight (lbs.)	310	315	385	435	550	325	340	375	425
PRICE									
Retail price, without installation	$99.50	129.50	149.50	199.50	239.50	171.00	189.00	234.00	265.00

CABINET MATERIALS
Make of cabinet: Sanitary
Material used for exterior: Steel
Material used for frame: Wood
Finish of shelves: Tinned

INSULATION
Make of insulation: Porcelain models — Dry-Zero; all others—Sanifelt
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs

FINISH
Cabinet finish (exterior): Models 4, 41, 51, 71 and 91—synthetic porcelain; all others—porcelain
Colors offered as standard: Porcelain — white; others—white or green and ivory or gray and white
Colors offered on special order: Synthetic porcelain—gray
Cabinet finish (interior): Model 4—enamel; all others—porcelain

HARDWARE
Process of manufacture: Cast and stamped
Basic metal of hardware: Brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Models 4 and 41—wood; all others—phenolic material
Material used for gasket: Rubber

EVAPORATOR
Make of evaporator: Sanitary and others
Evaporator construction: Header and tube
Metal used for evaporator: Brass and copper
Type of refrigerant control: Low side float
Make of expansion valve: None
Make of brine tank: None
Solution used for brine: None
Type and make of trays: Aluminum and Flexotray
Dimensions of ice cube (inches): Models 4, 41 and 51—1-3/16x1-7/16; model 91—1⅝x1⅝; all others—1⅛x1-3/16

COMPRESSOR
Make of compressor: Sanitary
Type of system: Conventional
Type of compressor: Reciprocating
Compressor drive: Belt
Type and make of shaft seal: Sylphon
Location of compressor: Below

CONDENSER
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

REFRIGERANT
Refrigerant used: Sulphur Dioxide
Chemical formula: SO_2

LUBRICATION
Make of compressor lubricant: Water white mineral oil
How often should motor be oiled: Semi-annually

MOTOR
Type of motor: Capacitor and Repulsion-Induction
Method of starting: Direct
How adapted to odd frequency: Change motor
What additional cost is entailed: Extra cost of motor
How adapted to direct current: Change motor
What additional cost is entailed: Extra cost of motor

CONTROL
Type of control: Temperature
Temperature regulation method: Manual regulator
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Retailer
Guarantee period on system: Three years
By whom serviced: Dealer and distributor
Are replacement parts sold to independent service companies: Yes

O'Keefe & Merritt

O'KEEFE & MERRITT CO.
3700 E 9th St., Los Angeles, Calif.

Model or Catalog No.	300	400	450	500	4580	5510	7014	1122
CABINET SPECIFICATIONS								
Overall dimensions, including hardware								
Height (inches)	53	56	58	59	55	58	64	64
Width (inches)	24	24	26	28	24	28	30	41
Depth (inches)	23	23	23	23	23	23	23	23
Thickness of insulation								
Top of cabinet (inches)	2	2	2	2	3	3	3	3
Sides of cabinet (inches)	2	2	2	2	3	3	3	3
Bottom of cabinet (inches)	2	2	2	2	3	3	3	3
Inside dimensions of cabinet liner								
Height (inches)	25	25	26½	27½	25	27½	33	33
Width (inches)	18	18	20	22	18	22	24	35
Depth (inches)	17	17	17	17	17	17	17	17
Thickness of exterior metal (gauge)	24	24	24	24	24	24	24	22
Thickness of interior metal (gauge)	24	18	18	18	18	18	18	18
Number of refrigerator doors	1	1	1	1	1	1	1	2
STORAGE CAPACITY								
Gross food storage capacity (cu. ft.)	4.43	4.43	5.21	5.95	4.42	5.95	7.79	11.36
Net food storage (cu. ft.) (Nema rating)	3.5	3.5	4.25	5.0	3.7	5.0	6.2	9.2
Number of shelves	3	3	4	4	4	4	5	10
Total shelf area (sq. ft.) (Nema rating)	6.5	6.5	9.5	10.5	8.0	10.0	14.0	22.0
Greatest distance between any two shelves	11⅜	11½	12¼	12	10¾	12	11¼	12
Shortest distance between any two shelves	6½	6½	3½	4⅛	3¼	3⅞	4¼	4¼
ICE CUBE TRAYS								
Number of ice cube trays	2	2	2	2	2	3	4	4
Inside dimensions of trays (inches)								
Length (at top of tray)	8½	8½	8½	8½	8½	8½	8½	8½
Width (at top of tray)	5⅛	5¼	5¼	5¼	5¼	5⅛	5⅛	5⅛
Depth	1½	1½	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	56	56	56	56	56	84	112	112
Weight of ice cubes produced (lbs.)	3½	3½	3½	3½	3½	5¼	7	7
COMPRESSOR SPECIFICATIONS								
Bore (inches)	1½	1½	1¾	1¾	1¼	1¼	1¾	1½
Stroke (inches)	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Standard speed (rpm)	325	325	325	325	270	270	270	270
Number of cylinders	1	1	1	1	2	2	2	2
Compressor capacity (lbs.) (ASRE rating)	90	90	95	100	100	105	127	160
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-4
Quantity of refrigerant in system (lbs.)	1 to 1½ lbs., depending upon size							
Quantity of lubricant in system	½ pint to 1 pint, depending upon size							
WEIGHT								
Net weight of complete refrigerator (lbs.)	243	290	315	361	323	370	413	562
Total shipping weight (lbs.)	308	355	380	426	395	445	498	672
PRICE								
Retail price, without installation	$99.00	129.50	143.00	157.50	165.00	189.50	224.50	298.00

CABINET MATERIALS
Make of cabinet: O'Keefe & Merritt Co.
Material used for exterior: Metal
Make of exterior metal: Furniture steel
Material used for frame: Wood
Make of interior metal: Model 300—Galvannealed; all others—Armco
Finish of shelves: Tinned

INSULATION
Make of insulation: Insulite
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs
How is insulation waterproofed: Waterproofed paper

FINISH
Cabinet finish (exterior): Lacquer
Make of exterior finish: Berry Bros.
Colors offered as standard: White
Colors offered on special order: None
Cabinet finish (interior): Model 300—lacquer; all others—porcelain
Make of interior finish: Lacquer—Berry Bros.; porcelain—O'Keefe & Merritt

HARDWARE
Make of hardware: O'Keefe & Merritt
Process of manufacture: 300, 400 and 450 models—stamped; all others—cast
Basic metal of hardware: Brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Model 300—wood; all others—Panelyte
Material used for gasket: Model 300—rubberized cloth; all others—rubber
Make or brand of gasket: Western Gasket

EVAPORATOR
Make of evaporator: O'Keefe & Merritt
Evaporator construction: 300, 400, 450 and 500 models—shell; all others—tubular
Metal used for evaporator: Shell type—steel; tubular type—copper
Type of refrigerant control: Expansion valve
Make of expansion valve: American Radiator
Make of brine tank: None
Solution used for brine: None
Type and make of trays: O'Keefe & Merritt
Dimensions of ice cube (inches): 1⅛x1⅛x1½

SPECIAL FEATURES: 4580, 5510, 7014 and 1122—crisper

COMPRESSOR
Make of compressor: O'Keefe & Merritt
Type of system: Conventional
Type of compressor: Reciprocating
Compressor drive: Belt
Type and make of shaft seal: Bellows
Location of compressor: Model 300—above; all others—below

CONDENSER
Make of condenser: Bush
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

REFRIGERANT
Refrigerant used: Methyl Chloride
Trade name: Artic
Chemical formula: CH_3Cl

LUBRICATION
Make of compressor lubricant: Argon
How often should motor be oiled: Semi-annually

MOTOR
Make of motor: 300, 400, 450 and 500 models—General Electric; all others—Wagner
Type of motor: General Electric — capacitor; Wagner—Repulsion-Induction
Method of starting: Direct
How adapted to odd frequency: Change motor
What additional cost is entailed: Extra cost of motor
How adapted to direct current: Change motor
What additional cost is entailed: Extra cost of motor
Type of wire or cable used: Rubber covered

CONTROL
Make of control: Ranco
Type of control: Temperature
Temperature regulation method: Model 300—not variable; all others—manual regulator
Make of overload cut-out: Ranco
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Manufacturer
Guarantee period on cabinet: 300, 400, 450 and 500 models—one year; others—three years
Guarantee period on system: Same as cabinet
By whom serviced: Factory
Are replacement parts sold to independent service companies: Yes

Westinghouse, Universal and Williams Specifications

Westinghouse

WESTINGHOUSE ELEC. & MFG. CO.
Mansfield, Ohio

Model or Catalog No.	AL-30	AL-45	AP-45	AL-73	AP-73	AL-90	AP-90	AP-130	AP-200
CABINET SPECIFICATIONS									
Overall dimensions, including hardware									
Height (inches)	42	55¼	55¼	59⅞	59⅞	59⅞	59⅞	60	76
Width (inches)	24	24¼	24¼	31⅞	31⅞	39½	39½	50¾	51½
Depth (inches)	19½	20¾	24	22¼	22¼	22⅜	22¾	27⅛	27⅛
Thickness of insulation									
Top of cabinet (inches)	2	3	3	4	4	4	4	2¾	4
Sides of cabinet (inches)	2	2½	2½	3	3	3½	3½	2¾	4¼
Inside dimensions of cabinet liner									
Height (inches)	19⅜	29¼	29¼	32½	32½	32	32	29¾	50½
Width (inches)	18¼	17⅞	17⅞	25	25	31¼	31¼	43⅛	40⅛
Depth (inches)	15⅛	15½	15½	16⅛	16⅛	16⅛	16⅛	19⅞	18⅜
Thickness of exterior metal (gauge)	18	18	20	18	20	18	20	20	20
Thickness of interior metal (gauge)	20	20	20	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	1	1	2	2	2	4
STORAGE CAPACITY									
Gross food storage capacity (cu. ft.)	3.1	4.7	4.7	7.6	7.6	9.3	9.3	15.3	21.8
Net food storage (cu. ft.) (Nema rating)	2.6	4.2	4.2	7.2	7.2	9	9	13.5	20.1
Number of shelves	2	3	3	3	3	6	6	5	11
Total shelf area (sq. ft.) (Nema rating)	5.3	8.4	8.4	12.8	12.8	15.7	15.7	24.8	37.7
Greatest distance between any two shelves	6	6	7	7	7	7	7	9	9
Shortest distance between any two shelves	5¾	4½	4½	4½	4½	4½	4½	6	5⅜
ICE CUBE TRAYS									
Number of ice cube trays	2	3	3	3	3	3	3	7	7
Inside dimensions of trays (inches)									
Length (at top of tray)	12¼	12¼	12¼	12¼	12¼	12¼	12¼	12¼	12¼
Width (at top of tray)	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞
Depth (shallow tray)	1½	1½	1½	1½	1½	1½	1½	1½	1½
Depth (deep tray)	....	....	....	3	3	3	3	3	3
Number of cubes produced at one freezing	36	54	54	96	96	96	96	192	192
Weight of ice cubes produced (lbs.)	3½	5¼	5¼	11	11	11	11	21	21
COMPRESSOR SPECIFICATIONS									
Bore (inches)	1	1	1	1	1	1	1	1	1
Stroke (inches)	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞
Standard speed (rpm)	1725	1725	1725	1725	1725	1725	1725	1725	1725
Number of cylinders	1	1	1	1	1	1	1	2	2
Motor size (hp.)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-4	1-4
Standard motor speed (rpm)	1725	1725	1725	1725	1725	1725	1725	1725	1725
Quantity of refrigerant in system (lbs.)	2¾	2¾	2⅞	3¾	3¾	3¾	3½	....	....
Quantity of lubricant in system	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.	2 lbs.
WEIGHT									
Net weight of complete refrigerator (lbs.)	242	278	278	430	430	458	458	600	744
Total shipping weight (lbs.)	315	361	361	534	534	569	569	875	
PRICE									
F. o. b. factory price	$149.50	165.00	195.00	236.00	275.00	300.00	340.00	470.00	650.00
Retail price, without installation	$149.50	165.00	195.00	236.00	275.00	300.00	340.00	470.00	650.00

CABINET MATERIALS
Make of cabinet: Westinghouse
Material used for exterior: Metal
Make of exterior metal: AL models — furniture steel; AP models—Armco
Material used for frame: Steel
Make of interior metal: Armco
Finish of shelves: Tinned

INSULATION
Make of insulation: Balsam Wool and Celotex
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs
How is insulation waterproofed: Waterproof packages
Make of waterproofing material: Scutan sealed paper

FINISH
Cabinet finish (exterior): AL models—lacquer; AP models—porcelain
Make of exterior finish: Lacquer—DuPont; porcelain—Ferro
Colors offered as standard: White
Colors offered on special order: None
Cabinet finish (interior): Porcelain
Make of interior finish: Ferro

HARDWARE
Make of hardware: National Lock
Process of manufacture: Stamped
Basic metal of hardware: Brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Micarta
Material used for gasket: Rubber
Make or brand of gasket: Miller

EVAPORATOR
Make of evaporator: Westinghouse
Evaporator construction: Shell
Metal used for evaporator: Porcelain on steel
Type of refrigerant control: High side float
Make of expansion valve: None
Make of brine tank:
Solution used for brine:
Type and make of trays: Models AL-30, AL-45 and AP-45—aluminum; others—aluminum and Flexotray
Dimensions of ice cube (inches): 1½

SPECIAL FEATURES
AP models except AP-45—interior light
AP models except AP-45—vegetable tray

COMPRESSOR
Make of compressor: Westinghouse
Type of system: Hermetic
Type of compressor: Reciprocating
Compressor drive: Direct
Type and make of shaft seal: None
Location of compressor: Above

CONDENSER
Make of condenser: Westinghouse
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

REFRIGERANT
Refrigerant used: Sulphur Dioxide
Trade name:
Chemical formula: SO_2

LUBRICATION
Make of compressor lubricant: Standard Oil
When should motor be oiled: Never

MOTOR
Make of motor: Westinghouse
Type of motor: Split phase
Method of starting: Unloader
How adapted to odd frequency: Transformer for 25-cycle
What additional cost is entailed: $3.75
How adapted to direct current: Converter
What additional cost is entailed: $10.00
Type of wire or cable used: Rubber covered and metal sheathed

CONTROL
Make of control: Westinghouse
Type of control: Temperature
Temperature regulation method: Manual regulator
Make of overload cut-out: Westinghouse Dual-Automatic
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Manufacturer
Guarantee period on cabinet: Two years
Guarantee period on system: Two years
By whom serviced: Factory
Are replacement parts sold to independent service companies: No

Universal Cooler

UNIVERSAL COOLER CORP.
7424 Melville Ave., Detroit, Mich.

Model or Catalog No.	L-32	L-452	L-552	L-652	L-82	P-552	P-652	P-82
CABINET SPECIFICATIONS								
Overall dimensions, including hardware								
Height (inches)	50	55	58⅜	61½	63½	58⅜	61½	63½
Width (inches)	20½	26⅜	28½	32	36½	28½	32	36½
Depth (inches)	21½	23¼	23⅞	26¼	25½	23⅞	26¼	25½
Thickness of insulation								
Top of cabinet (inches)	2	3	3	3½	3	3	3½	3
Sides of cabinet (inches)	2	3	3	3½	3	3	3½	3
Bottom of cabinet (inches)	2	3	3	3½	3	3	3½	3
Inside dimensions of cabinet liner								
Height (inches)	25	27½	28	30	33	28	30	33
Width (inches)	16	19½	21½	24	29	21½	24	29
Depth (inches)	15½	16	17½	18½	17¾	17½	18½	17¾
Number of refrigerator doors	1	1	1	1	2	1	1	2
STORAGE CAPACITY								
Gross food storage capacity (cu. ft.)	3.59	4.92	6.1	7.71	9.82	6.1	7.71	9.82
Net food storage (cu. ft.) (Nema rating)	3.16	4.05	4.87	6.17	7.90	4.87	6.17	7.90
Number of shelves	3	5	5	5	5	5	5	5
Total shelf area (sq. ft.) (Nema rating)	5.86	8.81	11.22	13.43	14.11	11.22	13.43	14.11
Greatest distance between any two shelves	6½	6½	6½	6	12	6½	6	12
Shortest distance between any two shelves	5½	5	5	5½	6	5	5½	6
ICE CUBE TRAYS								
Number of ice cube trays	2	2	3	4	5	3	4	5
Inside dimensions of trays (inches)								
Length (at top of tray)	8	9¼	9¼	9¼	9¼	9¼	9¼	9¼
Width (at top of tray)	3⅝	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛
Depth	1⅜	1½	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	36	56	84	112	140	84	112	140
Weight of ice cubes produced (lbs.)	2	4	6	8	10	6	8	10
COMPRESSOR SPECIFICATIONS								
Bore (inches)	1½	1½	1½	1½	1½	1½	1½	1½
Stroke (inches)	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Standard speed (rpm)	430	430	430	430	430	430	430	430
Number of cylinders	1	1	1	1	1	1	1	1
Compressor capacity (lbs.) (ASRE rating)	120	120	120	120	120	120	120	120
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6
Standard motor speed (rpm)	1740	1740	1740	1740	1740	1740	1740	1740
Quantity of refrigerant in system (lbs.)	1	1	1	1	1	1	1	1
Quantity of lubricant in system	¾ pt.	¾ pt.	¾ pt.	¾ pt.	¾ pt.	¾ pt.	¾ pt.	¾ pt.
WEIGHT								
Net weight of complete refrigerator (lbs.)	230	325	340	400	465	370	440	495
Total shipping weight (lbs.)	285	375	405	470	540	435	510	575
PRICE								
F. o. b. factory price	$160	165	180	220	290	200	240	310
Installed price	$160	165	180	220	290	200	240	310

CABINET MATERIALS
Make of cabinet: Rex
Material used for exterior: Metal
Material used for frame: Wood
Finish of shelves: Tinned

INSULATION
Make of insulation: Balsam Wool
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs

FINISH
Cabinet finish (exterior): L models—lacquer; P models—porcelain
Colors offered as standard: White
Colors offered on special order: None
Cabinet finish (interior): Porcelain

HARDWARE
Make of hardware: Grand Rapids Brass
Process of manufacture: Stamped
Basic metal of hardware: Brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Wood
Material used for gasket: Rubber
Make or brand of gasket: Wirf

EVAPORATOR
Make of evaporator: Universal Cooler
Evaporator construction: Tubular
Metal used for evaporator: Copper
Type of refrigerant control: Expansion valve
Make of expansion valve: American Radiator
Make of brine tank: None
Solution used for brine: None
Type and make of trays: Model L-32—metal; all others—metal and Flexotray
Dimensions of ice cube (inches): Model L-32—1¼x1¼x1⅛; all others—1¼x1¼x1½

SPECIAL FEATURES
Models L-82 and P-82—interior light
Vegetable tray except model L-32

COMPRESSOR
Make of compressor: Universal Cooler
Type of system: Conventional
Type of compressor: Reciprocating
Compressor drive: Belt
Type and make of shaft seal: Universal Cooler bellows
Location of compressor: Below

CONDENSER
Make of condenser: Bush
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

REFRIGERANT
Refrigerant used: Methyl Chloride
Trade name: Artic
Chemical formula: CH_3Cl

LUBRICATION
Make of compressor lubricant: Standard Oil
When should motor be oiled: One to three years

MOTOR
Make of motor: Wagner, Howell and General Electric
Type of motor: Capacitor and Repulsion-Induction
Method of starting: Direct
How adapted to odd frequency: Change motor
What additional cost is entailed: Extra cost of motor
How adapted to direct current: Change motor
What additional cost is entailed: Extra cost of motor
Type of wire or cable used: BX metal sheathed cable

CONTROL
Make of control: Penn
Type of control: Temperature
Temperature regulation method: Manual regulator
Make of overload cut-out: None
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Retailer
Guarantee period on cabinet: One year
Guarantee period on system: One year
By whom serviced: Distributor
Are replacement parts sold to independent service companies: Yes

Ice-O-Matic

WILLIAMS OIL-O-MATIC HEATING CORP.
Bloomington, Ill.

Model or Catalog No.	Y-4	L-40	L-50	L-50T	P-50	L-60	L-60T	P-60	P-61
CABINET SPECIFICATIONS									
Overall dimensions, including hardware									
Height (inches)	52	55½	59½	47	59½	61	49	61	59
Width (inches)	23½	24	26	26	26	28½	28½	28½	35
Depth (inches)	23½	23½	24½	24½	24½	26	26	26	28
Thickness of insulation									
Top of cabinet (inches)	2	2	2½	2½	2½	3	3	3	3
Sides of cabinet (inches)	2	2	2½	2½	2½	3	3	3	3
Bottom of cabinet (inches)	2	2	2½	2½	2½	3	3	3	3
Inside dimensions of cabinet liner.									
Height (inches)	26	26¼	29½	29¼	29½	31¼	31¼	31¼	30
Width (inches)	18⅞	19	20½	20½	20½	22	22	22	28
Depth (inches)	14⅜	15½	16¾	16⅜	16⅜	17⅜	17¾	17¾	17¾
Thickness of exterior metal (gauge)	22	22	22	22	22	22	22	22	22
Thickness of interior metal (gauge)	20	20	20	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	1	1	1	1	1	2
STORAGE CAPACITY									
Gross food storage capacity (cu. ft.)	4.2	4.5	5.9	5.9	5.9	7.0	7.0	7.0	8.7
Net food storage (cu. ft.) (Nema rating)	3.7	4.0	5.3	5.3	5.3	6.4	6.4	6.4	7.8
Number of shelves	3	3	4	4	4	4	4	4	5
Total shelf area (sq. ft.) (Nema rating)	6.9	7.7	10.0	10.0	10.0	11.8	11.8	11.8	11.9
Greatest distance between any two shelves	6⅝	6½	6½	6½	6½	7¼	7¼	7¼	10
Shortest distance between any two shelves	6¼	5¼	5½	5½	5½	5¼	5¼	5¼	5
ICE CUBE TRAYS									
Number of ice cube trays	2	3	4	4	4	4	4	4	4
Inside dimensions of trays (inches)									
Length (at top of tray)	10¼	8⅞	8⅞	8⅞	10¼	10¼	10¼	10¼	10
Width (at top of tray)	3⅝	3⅝	3⅝	3⅝	3¾	3¾	3¾	3¾	4½
Depth	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1½
Number of cubes produced at one freezing	42	54	72	72	72	84	84	84	84
Weight of ice cubes produced (lbs.)	2.8	3¾	5	5	5	5½	5½	5½	8½
COMPRESSOR SPECIFICATIONS									
Bore (inches)	1¼	.95	.95	.95	.95	.95	.95	.95	.95
Stroke (inches)	1½	1½	1½	1½	1½	1½	1½	1½	1½
Standard speed (rpm)	300	1750	1750	1750	1750	1750	1750	1750	1750
Number of cylinders	1	1	1	1	1	1	1	1	1
Compressor capacity (lbs.) (ASRE rating)	68	64	64	64	64	64	64	64	64
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6
Standard motor speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1750	1750
Quantity of refrigerant in system (lbs.)	3.9	3.2	3.5	3.5	3.5	3.3	3.3	3.3	4.1
Quantity of lubricant in system	1½ pts.	3 pts.	3 pts.	3 pts.	3 pts.	3 pts.	3 pts.	3 pts	3 pts.
WEIGHT									
Net weight of complete refrigerator (lbs.)	235	405	450	465	470	487	495	500	560
Total shipping weight (lbs.)	285	445	500	515	520	537	545	550	610
PRICE									
F. o. b. factory price	$129.50	169.50	197.00	185.00	215.00	232.00	220.00	250.00	305.00
Retail price, without installation	$129.50	169.50	197.00	185.00	215.00	232.00	220.00	250.00	305.00

CABINET MATERIALS
Make of cabinet: Rex except P-61—Seeger
Material used for exterior: Metal
Material used for frame: Wood
Make of interior metal: Armco
Finish of shelves: Tinned

INSULATION
Make of insulation: Model Y-4—Ideal; all others—Dry-Zero
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs
How is insulation waterproofed: Waterproofed paper
Make of waterproofing material: Hydrolene

FINISH
Cabinet finish (exterior): L & Y models—lacquer; P models—porcelain
Colors offered as standard: White
Colors offered on special order: None
Cabinet finish (interior): Porcelain

HARDWARE
Make of hardware: National Lock
Process of manufacture: Cast and stamped
Basic metal of hardware: Brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Wood and Bakelite
Material used for gasket: Rubber

EVAPORATOR
Make of evaporator: Fedders
Evaporator construction: Model L-40, L-60, L-60T, and P-60—shell; all others—tube
Metal used for evaporator: Copper
Type of refrigerant control: Low side float
Make of expansion valve: None
Make of brine tank: None
Solution used for brine: None
Type and make of trays: Aluminum
Dimensions of ice cube (inches): Rex—1-3/16x1¾x1¼; Seeger—1-7/16x1-7/16x1½

CONDENSER
Make of condenser: Model Y-4—Fedders; all others—McCord
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

COMPRESSOR
Make of compressor: Williams
Type of system: Model Y-4—conventional; all others—hermetic
Type of compressor: Reciprocating
Compressor drive: Model Y-4—belt; all other—direct
Type and make of shaft seal: Model Y-4—Cooke; all others—none
Location of compressor: Models L-50T and L-60T—above; all others—below

REFRIGERANT
Refrigerant used: Methyl Chloride
Chemical formula: CH_3Cl

LUBRICATION
Make of compressor lubricant: Stanolind
When should motor be oiled: Model Y-4—semi-annually; all others—fan motor annually

MOTOR
Make of motor: Model Y-4—Williams; all others—Baldor
Type of motor: Model Y-4—capacitor; all others—split phase
Method of starting: Centrifugal switch
How adapted to odd frequency: Change motor
What additional cost is entailed: $10
How adapted to direct current: Model Y-4—change motor; all others—not available for D. C.
Type of wire or cable used: Rubber sheathed
Make of wire or cable used: Belden

CONTROL
Make of control: Penn
Type of control: Temperature
Temperature regulation method: Manual regulator
Make of overload cut-out: Penn
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Manufacturer
Guarantee period on cabinet: One year
Guarantee period on system: Three years
By whom serviced: Dealer or distributor
Are replacement parts sold to independent service companies: No

ENGINEERS FIGHT USE OF F-12 UNREGULATED

(Continued from Page 9, Column 5)

refrigerant shall be installed or maintained in or on any of the places so mentioned in Subdivisions 1-2-3-4-5-6 of Sec. 219-(f), unless the provisions of Subdivision 7 of said section are complied with.

4. All refrigerating machinery rooms in which F-12 refrigerant is used shall be maintained vapor-tight and shall conform with the requirements of Sec. 220-1-(a).

5. Adequate ventilation shall be provided for each room in which F-12 is used and which shall conform with Subdivisions a-b-c-d of Sec. 220-2.

6. Test pressures and setting of safety valves for systems using F-12 shall be included in Column No. 1—H. P. Side 230 lbs.; Column No. 2—L. P. Side 115 lbs.; Column No. 3—150 lbs. of Sec. 222-(a).

7. Storage of F-12 refrigerant shall conform with Sec. 227-3-(e).

8. All other sections of the Refrigerating Ordinance not above mentioned shall be complied with.

Respectfully submitted,
Thomas A. Larkin,
Acting Deputy Chief;
John F. Dixon,
Inspector of Combustibles;
C. K. Michaels,
Engineering Inspector.

EXHIBIT No. 5-- E. T. WILLIAMS

Brief in reference to the Potential Hazards attaching to use of "FREON" (Dichloro-Difluoro-Methane) in Refrigerating Systems.

New York, April 25, 1932.

Honorable Joseph H. Hannon, Deputy Fire Commissioner, Chairman, Board of Hazardous Trades, Fire Department of City of New York, Municipal Building, New York, N. Y.

Referring to the meeting of your Board at the Municipal Building on Friday, April 15, we wish to thank you for the courtesy extended in granting us a hearing in connection with Consideration of the Hazards attaching to the use of FREON in Refrigerating Systems.

We also appreciate your further courtesy in extending to us permission to submit a brief on this subject and in accordance therewith we offer the following for your kind consideration:

1. The refrigerant, Dichloro-Difluoro-Methane (CCl_2F_2), heretofore known as "F-12," "K-12" and "FREON" will be referred to herein by the latest adopted trade name "FREON", excepting in quoted references.

2. FREON has had world-wide publicity through articles published in the News and Trade papers, Scientific Journals and otherwise. Its alleged safety as a refrigerant has been featured, emphasized and capitalized while the deadly hazard of its decomposition products has been concealed, minimized and/or totally denied upon occasion. Widespread and persistent effort has been expended by the manufacturers of this refrigerant to keep it out of existing Safety Codes and free from all restrictive measures governing its installation and use.

This effort is still being carried on, not alone in New York City, but in various municipalities throughout the country.

Opposition, by the producers and owners of FREON, to its proper classification in the American Standards Association Refrigeration Safety Code has been most determined and aggressive; methods well calculated to obstruct and delay action by the Code Committee of this Association have been employed.

It is our purpose, in submitting this Brief, to acquaint you with the dangerous properties of the decomposition products of this refrigerant and to show conclusively why the use of FREON should be safeguarded by proper Code restrictions.

To label an article "Safe" when, under certain conditions of use, it is known to be a most deadly poison is inexcusable and merits the most severe condemnation.

3. It is not contended that FREON, when not decomposed by flame or heat, is irritant, flammable or particularly toxic.

4. FREON, however, will not support respiration. Therefore, in excessive concentration with air, it is capable of causing serious breathing disturbance and/or Asphyxia, the same, as was alleged, occurred in some of the ten (10) fatalities in Chicago in 1929, due to the escape of Methyl Chloride from Multiple Systems. The total quantity permitted in a system, in locations where there is no open or properly ventilated flame, should therefore be limited to an amount that will not cause serious breathing disturbance or asphyxia in case it all escaped.

In determining such quantity, it should be based on the amount that would create a dangerous concentration in the smallest room in which any refrigerant containing part of the system is located.

5. FREON will readily decompose in any open flame or when contacting metal surfaces (the temperature of which, according to the Underwriters' Laboratories' report, is in excess of 550° C.). When so decomposed, FREON forms several excessively poisonous substances, all of which are gases that quickly diffuse in the air and must be breathed by anyone exposed to them.

According to report of the Underwriters' Laboratories: "Miscellaneous Hazard No. 2256," on tests made for the producers of FREON (Kinetic Chemicals, Inc.), these decomposition substances include:

Hydrogen Chloride (H Cl) (Hydrochloric Acid Gas)
Hydrogen Fluoride (H F or H_2F_2) (Hydrofluoric Acid Gas)
Free Chlorine (Cl_2)
Phosgene (C O Cl_2) (War Gas).

The relative physiological response to various concentrations of these gases, according to Henderson & Haggard Monograph Series No. 35, entitled "Noxious Gases and the Principles of Respiration Influencing Their Action" (1927) are given in the following table:

Parts of Gas Per Million Parts of Air—By Volume

Physiological Response	Hydrogen Chloride (Hydrochloric Acid Gas	Hydrogen Fluoride (Hydrofluoric Acid Gas)	Chlorine	Phosgene (War Gas)
Least detectable odor			3.5	5.6
Least to irritate eyes				4.0
Least to irritate throat			15.1	3.1
Least to cause coughing			30.2	4.8
Maximum for prolonged exposure	10	3	1.0	1.0
Dangerous for short exposure	50	10	40 to 60	25.0
Rapidly fatal	1000 to 2000	50 to 250	1000	+25.0

These ratings correspond closely to those of other authorities including the U. S. Public Health Service in its Bulletin No. 185, page 31.

When it is remembered that 100 parts per million is only one one-hundredth of one per cent (0.01%), it may readily be realized what a very small quantity of any of the above tabulated products of FREON decomposition is required to quickly cause death.

6. While the principal decomposition products will be Hydrogen Chloride (Hydrochloric Acid Gas) and Hydrogen Fluoride (Hydrofluoric Acid Gas), the latter being rated by accepted authorities as a highly toxic gas, we should not lose sight of the fact that intermediate decomposition products such as free chlorine, phosgene and carbonyl fluoride may be formed, the amounts being dependent upon existing conditions.

In the Underwriters' Laboratories' report, above referred to, page 13, Table II, Test No. 3 in a 2.4% mixture of FREON with air, the concentration of phosgene produced amounted to 0.170% by volume. This is 1700 parts per million while anything over 25 p.p.m. or 0.0025% as indicated in the above table, is rapidly fatal. This is 68 times the concentration that will kill quickly.

In Tests No. 1 and No. 2 of Table II of the said Underwriters' Laboratories' report, the quantity of phosgene was not determined, but was found to be present by qualitative tests. 640 p.p.m. were found in Test No. 4 and 120 p.p.m. in Test No. 6. These concentrations are 25 and 4 times, respectively, the concentrations of phosgene required to quickly produce fatalities.

Numerous other tests, which will be enumerated herein, confirm, in a general way, the findings of the Underwriters' Laboratories. Even disregarding the other toxic elements of decomposition, it may be concluded from the foregoing that FREON in small concentration in air, in the presence of a flame or hot metal will produce sufficient phosgene to constitute a very serious hazard.

It may be further noted that Hydrogen Fluoride (Hydrofluoric Acid Gas) is rated as being approximately 3 to more than 20 times as toxic as Hydrogen Chloride (Hydrochloric Acid Gas).

7. In a series of 7 tests comprising—
2—tests at the Dupont Jackson Laboratories, Deepwater Point, N. J.
5—tests at the Underwriters' Laboratories (Chicago)
the average of the combined acids by volume was .774%. Of this total .430 was Hydrogen Fluoride (Hydrofluoric Acid Gas) and .334 was Hydrogen Chloride (Hydrochloric Acid Gas). Translating these quantities to parts per million, we have Hydrogen Fluoride (Hydrofluoric Acid Gas) 4300 p.p.m. Hydrogen Chloride (Hydrochloric Acid Gas) 3440 p.p.m. The concentration of FREON in air, from which these results were obtained varied from 1.0% to 7.7%, the average being approximately 3%. The least amount of combined acid gases resulted from the test at Deepwater Point in which 3½ lbs. FREON per 1000 Cubic Feet of air was employed. This is a concentration of 1.12%. The decomposition of this mixture resulted in a total of 0.04% or 400 p.p. million. Assuming this total to be divided about equally between Hydrochloric and Hydrofluoric Acid gases we would have 200 p.p.m. of each.

Referring to the table herein on page 3, it will be seen that the concentration of Hydrogen Chloride (Hydrochloric Acid Gas) is 4 times the amount rated as "dangerous for short exposure" and that of Hydrogen Fluoride (Hydrofluoric Acid Gas) is 20 times the amount dangerous for short exposure and 20% in excess of the average rated amount necessary to be "Rapidly fatal"—

$$\left\{\frac{50+250}{2} = 150 \text{ p.p.m.}\right\}$$

All of the other tests in this group showed considerably higher concentrations of these gases. From this it may safely be concluded that the hazard attendant upon these acid decomposition products of FREON, i. e., Hydrogen Fluoride (Hydrofluoric Acid Gas) and Hydrogen Chloride (Hydrochloric Acid Gas), fully justify the inclusion of FREON in the Refrigeration Code as an "IRRITANT" when located in space where there is provision for producing a flame or a sufficiently hot surface to cause decomposition.

8. In addition to the Underwriters' Laboratories the following may be listed as having made tests on the decomposition of FREON and investigation concerning the toxicity of the products of its decomposition:

a University of Cincinnati and at Dayton, Ohio, sponsored by Frigidaire Corp., December, 1930, and June, 1931. These are the only tests, of which we have information, that did not confirm the results obtained by the others listed herein. These tests were made for and witnessed by representatives of the New York Fire Department.

b. The American Standards Association Refrigeration Code Interpretation Sub-Committee in cooperation with N. Y. Fire Department at 115th St., New York.

c. Professor Francis J. Pond of Stevens Institute of Technology, Hoboken, N. J.

d. Kinetic Chemicals, Inc. (Manufacturer of FREON) by W. S. Calcott, Director of Staff of Jackson Laboratory, assisted by Dr. Robert A. Kehoe and Staff, at Deepwater Point, N. J., October, 1931. These tests were observed by over 60 Engineering, Professional and other interested witnesses.

e Electrolux Laboratory, 111th St. and First Ave., New York City.

For the purpose of appraising the potential hazard in the use of this refrigerant in locations where there is a possibility of its being released in a space containing an open flame or hot metal surface, the Deepwater Point and Underwriters' tests may be relied upon as authoritative.

For representative kitchen conditions and the hazard in fire fighting, the tests at 115th St. by the ASA Interpretations Committee will serve for reference.

The Deepwater Point tests were officially reported by Kinetic Chemicals, Inc. This report contained a copy of the Underwriters' Laboratories' tests and was distributed to those who witnessed the Deepwater Point tests.

The tests at 115th St., New York, Sept. 25, 1931, were officially reported by Mr. C. K. Michaels, Engineering Inspector, N. Y. Fire Department.

The report was addressed to Peter C. Spence, Chief of Fire Prevention, under date of Sept. 25, 1931.

9. The Michaels' report of the 115th St. test concludes with the following:

"RECOMMENDATIONS:

"I would respectfully recommend that the Board of Hazardous Trades reconsider its resolution of Jan. 20, 1931, wherein F-12 was permitted for general use as a refrigerant. (No one was aware of the breaking down qualities at the time of the Board's action."

"I would also respectfully recommend that the Frigidaire Corp. be notified to stop all installations in this city in which F-12 is used as the refrigerating agent, until proper safety rules regulating its use, are adopted by the Fire Commissioner. (This is in accordance with Section 216-(c) of the Refrigerating Code)."

"Respectfully submitted, C. K. Michaels, Engineering Inspector."

10. After the Deepwater Point tests were concluded, a comprehensive report covering that series of tests and those tests previously witnessed by representatives of the N. Y. Fire Department, was made by Messrs. Larkin, Dixon and Michaels, under date of Dec. 15, 1931.

This report was addressed to Peter C. Spence, Chief of Fire Prevention and, through him, submitted to your Board for action. This report concluded with the following:

"RECOMMENDATIONS:

"In view of the fact that Dichloro-Difluoro-Methane, commonly known as F-12, is a new refrigerant and is not included in the Code of Ordinances, but is permitted to be used subject to such conditions as are deemed by the Fire Commissioner necessary in the interest of Public Safety, the undersigned do respectfully recommend the following resolution be adopted:

"RESOLVED:

"That in accordance with Section 216-(c) the refrigerant Dichloro-Difluoro-Methane, commonly known as F-12, be permitted for use in New York City, with the following provisions, namely:

"1. The refrigerant F-12 is classified as irritant within the meaning of the refrigerating Code when used in a room in which is located an open flame, or device for producing or employing such open flame; as per Art. 1, Sec. 1, Subdivision 33-(e)."

"2. The direct method of refrigeration is restricted (when F-12 is used as the refrigerant) to buildings or parts of buildings so permitted by Sec. 219-(b)."

"3. No refrigerating system employing F-12 refrigerant shall be installed or maintained in or on any of the places so mentioned in Subdivisions 1-2-3-4-5-6 of Sec. 219-(f), unless the provisions of Subdivision 7 of said section are complied with."

"4. All refrigerating machinery rooms in which F-12 refrigerant is used shall be maintained vapor tight and shall conform with the requirements of Sec. 220-1-(a)."

"5. Adequate ventilation shall be provided for each room in which F-12 is used and which shall conform with Subdivisions a-b-c-d of Sec. 220-2."

"6. Test pressures and setting of safety valves for systems using F-12 shall be included in Column No. 1-H.P. Side 230 lbs; Column No. 2-L.P. Side 115 lbs.; Column No. 3-150 lbs. of Sec. 222-(a)."

"7. Storage of F-12 refrigerant shall conform with Sec. 227-3-(e)."

"8. All other sections of the Refrigerating Ordinance not above mentioned shall be complied with."

"Respectfully submitted, Larkin, Acting Deputy Chief; Dixon, Inspector of Combustibles; Michaels, Engineering Inspector.

It is understood this resolution is now before your Board for consideration.

11. The American Standards Association/B-9 Sectional Committee on Refrigeration Safety Code considered this refrigerant (FREON) in a meeting held March 18, 1931. A resolution which classified FREON as "IRRITANT," when located where there is an open flame, not ventilated in such manner as to carry to the outside air, all products and by-products of combustion, was submitted by letter ballot, to all members of this Committee.

The returns to April 22 were as follows:

For the resolution	27
Against the resolution	5
Not voting, including Chairman and Vice Chairman	3
Not yet heard from	8
Total members	43

This majority of 5 1/3 to 1 is the carefully considered opinion of qualified experts and clearly indicates that the use of this gas in refrigerating systems should be subject to definite code regulations.

12. At the meeting of your Board held April 15, the representatives of the FREON interests, in effect, alleged the following, to each of which we append our "Comments":

(a) That the tests at Deepwater Point did not simulate conditions that would exist in an ordinarily ventilated kitchen in that the test chamber was practically air tight while kitchens permit escape of the gas through crevices at doors and windows.

COMMENTS

Two abutting sides, the roof and the floor, of the Deepwater Point test chamber, were of wood construction lined with galvanized iron which was freshly painted for each day's tests with a heavy coat of "Lithopone," a flat white paint consisting of 70% Barium Sulphate, 26% zinc sulphide and 1 to 3% zinc oxide, made by Du Pont.

The other walls were made of three cellophane windows each.

FREON was the first refrigerant, tested each day, that would appreciably re-act with these surfaces to break them down. The paint coating was quite thick and hard at the start of the FREON tests. At the finish of the first FREON test each day the

(Concluded on Page 13, Column 1)

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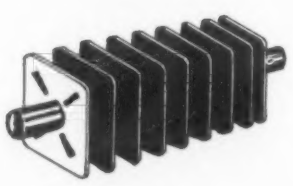

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FINNED TUBING

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BUSH

DISTRIBUTORS' FRANCHISE AVAILABLE IN PRINCIPAL CITIES

Engineers Oppose Exemption of Freon from Restrictions

ENGINEERS FIGHT USE OF F-12 UNREGULATED

(Concluded from Page 12, Column 5)

paint was badly splotched and blistered; the zinc was reduced to zinc chloride and zinc fluoride pulp; bare spots showed on the metal below the galvanizing which had turned black (probably carbon). To produce this effect, unquestionably a considerable percentage of the acid gases was absorbed and neutralized.

Further absorption occurred on the inner surface of the cellophane panels where moisture condensed due to their relatively low temperature. This condensate was found to be strongly acid.

In all probability, these reactions and absorption depleted the quantity of decomposition products fully as much, if not more than the equivalent of FREON that might escape from a well-ventilated kitchen.

A few days prior to these tests, Mr. H. D. Edwards, Chairman of the ASA/B-9 Sectional Interpretations Committee, protested this method of lining the test chamber and suggested that the chamber be lined with sheet rock.

Further protest was made at a Committee Meeting called by Kinetic Chemicals, Inc., on the second day of the tests regarding the acid neutralizing properties of this chamber. It was requested that non-acid absorbing material be substituted for the paint used and that the window frames be provided with two sheets of cellophane, one sheet attached to the inside and one to the outside of the frames, to provide heat insulating space between them and thus prevent condensation of moisture on their inner surfaces.

Neither of these suggestions were complied with. In view of this situation, to allege that this chamber was air tight and did not permit escape of the gas, as might occur in a kitchen having ordinary ventilation, is presumptuous, misleading and not in accordance with the facts.

(b) That the refrigerant must escape in close proximity to the flame to cause dangerous decomposition.

COMMENTS

All gases tend to equally distribute throughout the space into which they may be liberated in accordance with the well-known law governing the diffusion of gases.

The relative rate of diffusion, according to this law, varies under similar conditions inversely as the square root of their densities. This rate is affected to a considerable extent by pressure, temperature, convection currents and other causes of air movements. In the vicinity of a flame and/or hot surface, rapid convection currents are set up which cause an upward rush of air or air and gas mixtures, through the flame or in contact with such surface.

The movement of gases is very fast and, within the dimensions of an ordinary sized room, it would make little or no difference where the gas escape occurred as related to the position of the flame.

(c) That FREON is in excess of four times the weight of air and therefore quickly falls to the floor and escapes under doors and through other openings in a very short time.

COMMENTS

This is not substantiated by tests made in the kitchen at 115th St., New York (Sept. 25, 1931), and in an Apartment Kitchen located at 43-22 45th St., Sunny Side, L. I., by the Electrolux Laboratories in April, 1931. The kitchen at 115th St., was about 908 cu. ft. There was a double sliding door at one end and one window at the opposite end and a window on one side. The doors were ill fitted and far from tight. The gas was admitted at the floor.

This test was witnessed and reported on by Mr. Michaels under date of Sept. 25, 1931. In the first test, 1 lb. of FREON was admitted in a period of 45 seconds. Quoting from this report—"Within a few seconds after the F-12 was admitted in the room, acid fumes could be smelled. The fumes became very unpleasant and all left the room after two minutes."

In the second test, 2 lbs. were admitted to the room in 11 minutes—12 men in room. At 13 minutes—(quoting) "All men left because of strong acid fumes. Aid of wet rags not sufficient for breathing of acid fumes." Many of the men had left the room before this time expired and those remaining the full period could do so only by crouching near the floor.

The test at Sunny Side, L. I., was reported by Dr. William R. Hainsworth, Chief of Electrolux Laboratory. The kitchen had a gross volume of 950 cu. ft. and contained a 4 open burner gas range. One-half pound of FREON was allowed to escape to the room in 10 minutes—2 open burners lighted. The door and window were closed. (Quoting) "There was a considerable crack beneath the door between the kitchen and the living room, and it was possible to feel a draft with the hand through this opening." Odor of the acid gas could be detected 2 minutes after starting the release of the refrigerant. (Quoting) "Shortly after that the odor was very pronounced and towards the end of the 10-minute period sufficient acid gases had been formed to cause choking and coughing, and it was necessary to leave the room."

From the foregoing it is quite obvious that the escape of FREON under doors and through other openings is not sufficient to reduce the concentration to an amount that is not dangerous to life or health. This is also confirmed by Underwriters' Laboratories' report, pages 15 to 17 covering tests in a room 9'x7'x8', (504 cu. ft.).

(d) That only a small part of the FREON escaping into a room will reach the flame and only the amount that reaches the flame will be decomposed.

COMMENTS

There is no contention on this point. However, it should be understood that the decomposition products are at least 3 times the volume of the FREON decomposed. Referring to Underwriters' Laboratories' report, page 17, Table III, Test No. 9, in a concentration of 2.2% in air the possible decomposition products would be equivalent to 6.6% acids. The actual reported was 1.1% or 16% of the total. This is equivalent to 11,000 parts per million or many times the amount that will cause death after short exposure.

(e) That numerous tests have been conducted by the FREON interests since the Deepwater Point series of tests which indicate that this refrigerant is harmless.

COMMENTS

We have not heard of any such affirmed tests nor have we seen a report on any of these alleged tests nor received information as to the stated results obtained.

The several tests of FREON previously referred to herein, definitely establish, beyond any question of doubt, the existence of serious potential hazard in the use of FREON as a refrigerant.

(f) That the Bureau of Standards has recently completed tests of FREON and that the report on these tests may be obtained by the N. Y. Fire Department by making written application to that Bureau for them.

COMMENTS

Inquiry at the U. S. Bureau of Standards discloses that no tests on FREON decomposition hazards have been conducted by that Bureau, consequently no such report exists.

The comments in Item (e) are equally pertinent to this item.

(g) That the decomposition products constitute a sufficient warning agent and persons exposed to them will quickly avoid such exposure.

This is the same argument advanced for years past regarding Sulphur Dioxide, which is inherently a powerful warning agent but is in all existing codes. A warning agent is of no value, however, to infants, and persons confined or helpless nor will it serve to avoid a panic in a school, theater or other place of assemblage, but, on the contrary, is liable to cause panic in such places.

(h) That the "warning" notice was deleted from the original Underwriters' Laboratories' report as an improved product had been furnished by the Manufacturers and tested after the original report had been presented to their Fire Council for review.

COMMENTS

Admitting this to be the fact, there is nothing in the body of the final report to justify deletion of the "WARNING" notice.

On the contrary, the report definitely and positively shows that FREON decomposition products are very poisonous. In fairness to the users of this refrigerant and to the public, the "WARNING" should not only have been included in the listing, but very strongly emphasized.

(i) That some $80,000 worth of refrigerating equipment, using FREON, had been installed in a certain Hospital as well as other installations made in New York City on which payment was being withheld until a permit could be secured from the Fire Commissioner.

It was urged that permits be granted to cover these installations regardless of what regulations may be established hereafter.

COMMENTS

In Mr. Michaels' report on the 115th St. tests, Sept. 25, 1931, he recommended that the Board of Hazardous Trades reconsider its resolution of Jan. 20, 1931, wherein FREON was permitted for general use as a refrigerant and that the Frigidaire Corp. be notified to stop all installations in New York City in which FREON is used, until proper safety rules regulating its use are adopted by the Fire Commissioner or other Authority having jurisdiction.

It was reported, at that time, that the N. Y. Frigidaire representatives had pledged their word that no further installations, using this refrigerant, would be made in New York, contrary to the N. Y. Code covering other refrigerants.

Installations in Hospitals, Schools, Theaters, Prisons and places of assembly are contrary to the N. Y. Code. Therefore, no permit should be granted for installations made in violation of this pledge, regardless of whether the amount of money involved is large or small.

A similar situation, we are advised, exists in other cities at this time and it would be regrettable to set a precedent that amounts to granting a premium on Violations and exposes the inmates of these Institutions to large potential hazards.

12. **Hazards to Firemen and Occupants of Building in Case of Fire**

The second test at 115th St., reported by Mr. Michaels, Sept. 25, 1931, gives a fair picture of what might be expected to occur in the event of a fire in the basement or cellar of a building where FREON might escape.

This section of the report reads as follows:

"SECOND TEST:

"Conducted in stairway. The object of the test was to determine whether a person could use the five-story stairway as means of egress, perchance F-12 acid fumes were suddenly admitted at base of stairway. The condition being parallel to a refrigeratng apparatus in a fire in cellar or adjacent to stairway. A fire was started in a salamander and placed in a room on first floor adjacent to stairway."

"Two windows at top of stairway were opened to create ventilation. Four men placed on fifth floor landing, a white rat and guinea pig in wood cage placed on stairs between fourth and fifth floors. I believe there were also men on fourth floor landing. One minute after the signal was given that F-12 was being admitted into the fire in the salamander, the acid fumes were noticeable on the fifth floor landing. One more minute and the acid fumes were unbearable, the occupants withdrew from the stairway. **In my opinion, no human being could have descended to the street without a mask or other respiratory aid." (Boldface inserted.)**

It would appear that this test is a sufficient demonstration of the extreme danger of this refrigerant when exposed to flame as in a fire and any further comment regarding it is superfluous beyond drawing attention to the very small amount of FREON that produced the conditions reported. Four pounds total released; only one pound had been released when the men were forced to leave the stairway. They came down the fire escape).

13. SUMMARY

(a) It has been conclusively demonstrated that the decomposition products of FREON are extremely poisonous in exceedingly small percentage with air.

(b) It has been conclusively demonstrated that these decomposition products will be produced when FREON passes through a flame or in contact with a sufficiently hot metal surface.

(c) It has been conclusively demonstrated that FREON will quickly reach a flame or hot surface if either are present in a room where it has escaped.

(d) It has been conclusively demonstrated that the hazard, in case of a fire, is greatly increased in a building containing FREON, to the occupants as well as to the Firemen engaged in extinguishing the fire.

(e) It has been conclusively demonstrated that the tests, herein referred to, establish, beyond peradventure of doubt, that the decomposition products of FREON are deadly poisons even in extremely small concentration with air. Any further tests can serve no purpose other than to confuse the issue and/or delay action.

(f) The regulations, contained in the resolution, comprising the last page of the report of Dec. 15, 1931, signed by Messrs. Larkin, Dixon and Michaels, and which is now before your Board for action, are about the minimum that will provide reasonable safety in the use of this refrigerant. These requirements are not particularly burdensome to this Industry and in fairness to the New York Public and to the Fire Fighting force of your Department they should be adopted and strictly enforced.

(g) All existing installations in violation of these regulations, should promptly be made to comply with them or be removed from the building where they are located.

14. Mindful of your responsibilities for the protection of life and property in the City of New York and the effect your action in this matter may have upon other Municipalities and Communities throughout the Country at large, we are of the opinion, born of our own experience, that your Honorable Board should act very prudently in this matter; that no approval should be given for the use of FREON as a refrigerant in New York City except under the Safety Rules and Regulations presented in the report of your Engineers under date of Dec. 15, 1931.

Respectfully submitted, E. A. Williams, Consulting Engineer, Servel, Inc.; John Kenlon, Consulting Engineer.

Copies to Hon. John J. Dorman, John J. McElligott, Edward J. Kenny, Thomas F. Dougherty, Patrick Walsh, Peter C. Spence, John F. Dixon, Thomas A. Larkin, C. K. Michaels.

NOTE:—Mr. John Kenlon was for many years Chief of the New York Fire Department.

99.5% + Pure!

Artic

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(R&H Methyl Chloride)

THE IDEAL REFRIGERANT . . .

for

Multiple Unit Systems
Household Units
Water Coolers
Frozen Food Cabinets

Ice Cream Cabinets
Baking Industry
Candy Making
Dairy Products

Air Conditioning
Fur Storage
Flower Storage

Motor Truck Refrigeration
Refrigerator Cars
and
Other Commercial Purposes

Shipped in 60, 90 and 130 lb. cylinders, multi-unit tank cars of 18,000 lbs. capacity and single unit tank cars of 19,500 lbs. capacity.

Copies of the ARTIC SERVICE MANUAL and the booklet, "ARTIC—The Refrigerant" will be sent at your request.

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Another Achievement . . .

New "GENUINE DETROIT"

THERMOSTATIC EXPANSION VALVE

NO. 673

THE No. 673 Thermostatic Expansion Valve is the well-known No. 672 Automatic Valve (standard equipment on 90% of machines using the direct expansion system) equipped with a thermostatic power element.

HERMETICALLY SEALED—All joints are hermetically sealed.

ONE MOVING ASSEMBLY—The power element is attached to the single assembly in the expansion valve proper.

NO SPRINGS IN CONTACT WITH REFRIGERANT—The compensating spring is encased in the bakelite spacer sealed against both refrigerant and air.

BAKELITE SPACER—Insures complete insulation between power element and the low temperature of expansion valve.

FREE OF FRICTION—The entire mechanism of the power element and expansion assembly move in a straight line.

RANGE—On multi-temperature systems a difference of as much as 45° F can be maintained between the temperature of the warmest and coldest evaporators.

This new No. 673 Thermostatic Expansion Valve is available for use with methyl chloride, sulphur dioxide and F-12 (dichloro-floro-methane) in commercial installations of various sizes.

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Trumbull, Lincoln, Marquette & Viaduct
DETROIT, Mich., U. S. A.

Lubricators · Carburetors · Valves
Automatic Controls for temperature, pressure, humidity. Refrigeration, Oil Burner and Heating Accessories

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Coldspot, Majestic and Parker Specifications

Coldspot

SEARS ROEBUCK & CO
Chicago, Ill.

Model or Catalog No.	240C	440C	450C	460C	470C	440CP	450CP	460CP	470CP	480CP
CABINET SPECIFICATIONS										
Overall dimensions, including hardware										
Height (inches)	51	54¼	57¼	59⅝	59⅝	54¼	57¼	59⅝	59⅝	59⅝
Width (inches)	24⅜	24⅜	26⅜	30½	34⅞	24⅜	26⅜	30½	34⅞	40⅜
Depth (inches)	22	22¼	23¾	23¾	23¾	22¼	23¾	23⅝	23¾	23¾
Thickness of insulation										
Top of cabinet (inches)	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½
Sides of cabinet (inches)	2	2	2½	3	3	2	2½	3	3	3
Bottom of cabinet (inches)	2	2	2½	3	3	2	2½	3	3	3
Inside dimensions of cabinet liner										
Height (inches)	26¾	27½	30⅛	32	32	27½	30⅛	32	32	32
Width (inches)	19½	19½	20½	23⅝	28	19½	20½	23⅝	28	33½
Depth (inches)	15⅝	15	16	15½	15½	15	16	15½	15½	15½
Thickness of exterior metal (gauge)	22	22	20	20	20	22	20	20	20	20
Thickness of interior metal (gauge)	22	22	20	20	20	22	20	20	20	20
Number of refrigerator doors	1	1	1	1	2	1	1	1	2	2
STORAGE CAPACITY										
Gross food storage capacity (cu. ft.)	4.65	4.65	5.72	6.78	8.04	4.65	5.72	6.78	8.04	9.61
Net food storage (cu. ft.) (Nema rating)	4.15	4.13	5.09	6.04	7.30	4.13	5.09	6.04	7.30	8.84
Number of shelves	3	3	3	3	5	3	3	3	5	5
Total shelf area (sq. ft.) (Nema rating)	9.14	8.94	10.41	11.91	13.27	8.94	10.41	11.91	13.27	15.36
Greatest distance between any two shelves	5⅝	5⅞	6¼	6¼	7	5⅞	6¼	6¼	7	7
Shortest distance between any two shelves	4⅝	4⅝	5	4⅝	5⅝	4⅝	5	4⅝	5⅝	5⅝
ICE CUBE TRAYS										
Number of ice cube trays	3	3	3	4	4	3	3	4	4	5
Inside dimensions of trays (inches)										
Length (at top of tray)										
Width (at top of tray)										
Depth										
Number of cubes produced at one freezing	30	30	63	84	84	30	63	84	84	105
Weight of ice cubes produced (lbs.)	3	3	6	8	8	3	6	8	8	10
COMPRESSOR SPECIFICATIONS										
Bore (inches)										
Stroke (inches)										
Standard speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Number of cylinders										
Compressor capacity (lbs.) (ASRE rating)	125	125	125	125	175	125	125	125	175	175
Motor size (hp.)	1-6	1-6	1-6	1-6	1-4	1-6	1-6	1-6	1-4	1-4
Standard motor speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Quantity of refrigerant in system (lbs.)	2	2	2	2	2	2	2	2	2	2
Quantity of lubricant in system	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.
WEIGHT										
Net weight of complete refrigerator (lbs.)										
PRICE										
Installed price	$109.50	129.50	157.50	179.50	199.00	145.00	175.00	195.00	225.00	250.00

CABINET MATERIALS
Make of cabinet: Tennessee Furniture
Material used for exterior: Metal
Make of exterior metal: C models—Furniture sheet; CP models—Armco
Material used for frame: Wood
Make of interior metal: Armco
Finish of shelves: Tinned

INSULATION
Make of insulation: Dry-Zero
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs
How is insulation waterproofed: Duplex Craft Paper

FINISH
Cabinet finish (exterior): C models—Lacquer; CP models—Porcelain
Make of exterior finish: Lacquer models—Lilly; Porcelain models—Chicago Vitreous Enamel Co.
Colors offered as standard: White
Cabinet finish (interior): Porcelain
Make of interior finish: Chicago Vitreous Enamel Co.

HARDWARE
Make of hardware: Models 440-CP, 450-CP, 460-CP & 470-CP—Winters & Crampton and National Lock; all others—Winters & Crampton
Process of manufacture: Stamped
Basic metal of hardware: Brass
Finish of hardware: Chromium

DOORS
Material used for breaker strip: Model 240-C—Wood; All others—Formica
Material used for gasket: Model 240-C—Rubberized fabric; All others—Rubber
Make or brand of gasket: Model 240-C—Jarrow; All others—Miller

CONDENSER
Make of condenser: Sunbeam
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

EVAPORATOR
Make of evaporator: Sunbeam
Evaporator construction: Tubular
Metal used for evaporator: Copper & Brass
Type of refrigerant control: Expansion Valve
Make of expansion valve: American Radiator
Make of brine tank:
Solution used for brine:

COMPRESSOR
Make of compressor: Sunbeam
Type of system: Conventional
Type of compressor: Rotary
Compressor drive: Direct
Type and make of shaft seal: Bellows
Location of compressor: Above

REFRIGERANT
Refrigerant used: Sulphur Dioxide
Trade name:
Chemical formula: SO_2

LUBRICATION
Make of compressor lubricant: Argon
How often should motor be oiled: Semi-annually

MOTOR
Make of motor: Century
Type of motor: Repulsion-Induction
Method of starting: Direct
How adapted to odd frequency: Change motor
What additional cost is entailed:
How adapted to direct current: Change motor
What additional cost is entailed:
Type of wire or cable used: Rubber covered
Make of wire or cable used: Belden

CONTROL
Make of control: General Electric
Type of control: Temperature
Temperature regulation method: Manual regulator
Make of overload cut-out: General Electric lead pot
How is defrosting accomplished: Shut down unit

POLICY
Who determintes retail price: Retailer
Guarantee period on cabinet: Three years
Guarantee period on system: Three years
By whom serviced: Dealer
Are replacement parts sold to independent service companies: No

Majestic

GRIGSBY-GRUNOW CO.
5801 Dickens Ave., Chicago, Ill.

Model or Catalog No.	245	255	275	706	710	712	335	345	835	845
CABINET SPECIFICATIONS										
Overall dimensions, including hardware										
Height (inches)	55¼	55¾	59	60⅜	59¾	65¾	45½	52⅞	45½	52⅞
Width (inches)	24½	29⅞	34¼	29⅞	44	44	24	24	24	24
Depth (inches)	25½	27½	27½	25½	29⅝	29⅝	21⅝	21⅝	21⅝	21⅝
Thickness of insulation										
Top of cabinet (inches)	3	3	3	2½	2½	2½	2	2	2	2
Sides of cabinet (inches)	2⅛	3	3	2½	2½	2½	2	2	2	2
Bottom of cabinet (inches)	2⅛	3	3	2½	2½	2½	2	2	2	2
Inside dimensions of cabinet liner										
Height (inches)	27¾	28¼	31¾	33⅜	33⅜	39⅛	20	27⅜	20	27⅜
Width (inches)	19⅛	22½	26½	22½	38	38	19¼	19¼	19¼	19¼
Depth (inches)	16	16	16	16⅝	16⅝	16⅝	17⅛	17⅛	17⅛	17⅛
Thickness of exterior metal (gauge)	18	20	20	20	20	20	24	24	22	20
Thickness of interior metal (gauge)	20	20	20	20	20	20	22	22	22	22
Number of refrigerator doors	1	1	1	1	2	2	1	1	1	1
STORAGE CAPACITY										
Gross food storage capacity (cu. ft.)	4.90	5.89	7.80	7.10	12.15	14.10	3.81	5.20	3.81	5.20
Net food storage (cu. ft.) (Nema rating)	4.3	4.93	6.8	5.9	10.3	12.5	3.4	4.6	3.4	4.6
Number of shelves	4	4	4	4	6	8	3	4	3	4
Total shelf area (sq. ft.) (Nema rating)	9.7	10.6	12.5	11.9	18.8	23.3	8.55	10.72	8.55	10.72
Greatest distance between any two shelves	11⅞	12⅛	12⅛	12	15¼	15¼	11¾	12⅛	11¾	12⅛
Shortest distance between any two shelves	4⅜	4⅜	4⅜	4	5¼	5¼	4⅛	4⅛	4⅛	4⅛
ICE CUBE TRAYS										
Number of ice cube trays	2	3	3	3	6	6	2	2	2	2
Inside dimensions of trays (inches)										
Length (at top of tray)	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛	10⅛
Width (at top of tray)	4½	4½	4½	4½	4½	4½	4½	4½	4½	4½
Depth (shallow tray)	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Depth (deep tray)	....	3⅛	3⅛	3⅛	3⅛	3⅛	....	....	....	....
Number of cubes produced at one freezing	43	85	85	85	170	170	42	42	42	42
Weight of ice cubes produced (lbs.)	4	7½	7½	7½	15	15	3¾	3¾	3¾	3¾
COMPRESSOR SPECIFICATIONS										
Bore (inches)	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	2½	2½	2½	2½
Rotor diameter (inches)	1½	1½	1½	1½	1½	1½	2-3/16	2-3/16	2-3/16	2-3/16
Rotor height (inches)	1¼	1¼	1¼	1¼	1¼	1¼	1½	1½	1½	1½
Standard speed (rpm)	1725	1725	1725	1725	1725	1725	475	475	475	475
Compressor capacity (lbs.) (ASRE rating)	80	80	80	80	160	160	75	75	75	75
Motor size (hp.)	1-6	1-6	116	1-6	(2)1-6	(2)1-6	1-8	1-8	1-8	1-8
Standard motor speed (rpm)	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725
Quantity of refrigerant in system (lbs.)	3½	3¾	3¾	3¾	7½	7½	3¾	3¾	3¾	3¾
Quantity of lubricant in system	½ qt.	½ qt.	½ qt.	½ qt.	3 qts.	3 qts.	26 oz.	26 oz.	26 oz.	26 oz.
WEIGHT										
Net weight of complete refrigerator (lbs.)	298	374	426	519	910	985	234	284	244	294
Total shipping weight (lbs.)	356	442	500	625	1055	1145	265	321	275	331
PRICE										
F. o. b. factory price	$159.50	189.50	209.50	244.50	425.00	450.00	99.50	129.50	119.50	149.50
Retail price, without installation	Determined by Zone									

CABINET MATERIALS
Make of cabinet: Majestic
Material used for exterior: Steel
Make of exterior metal: Lacquer models—C. R. steel; porcelain models—enameling iron
Material used for frame: 200 series models—steel; all others—wood
Make of interior metal: Enameling iron
Finish of shelves: Tinned

INSULATION
Make of insulation: 700 models—Insulite; all others—Dry-Zero
Nature of insulating material: Vegetable
Bulk or formed slabs: Formed slabs
How is insulation waterproofed: Asphalt coated paper

FINISH
Cabinet finish (exterior): 200 & 300 models—lacquer; 700 & 800 models—porcelain
Make of exterior finish: Elasto—lacquer; stainless porcelain
Colors offered as standard: White
Colors offered on special order: Model 335—black
Cabinet finish (interior): Stainless porcelain
Make of interior finish:

HARDWARE
Make of hardware: Models 335, 835—Grand Rapids Brass; models 345, 845 — National Lock; others—Majestic
Process of manufacture: Majestic—die cast; all other—stamped
Basic metal of hardware: Model 245—Z-8 zinc alloy; Majestic—Russelite; all other—brass
Finish of hardware: Russelite—natural; all other—chromuim

DOORS
Material used for breaker strip: Phenolic fibre
Material used for gasket: 200 & 700 models—rubberized fabric; all others—rubber
Make of gasket: 200 & 700 models—Jarrow

EVAPORATOR
Make of evaporator: Majestic
Evaporator construction: Shell & tube
Metal used for evaporator: Brass & copper
Type of refrigerant control: 300 & 800 models—low side float; all others—high side float
Type and make of trays: Aluminum and Easy-Out
Dimensions of ice cube (inches): 1⅜ cube & triangle

SPECIAL FEATURES
200 & 700 models—Interior light

CONDENSER
Make of condenser: 200 & 700 models—Bush; 300 & 800 models—Modine
Fan or natural draft cooling: Fan
Type of condenser: Finned tube

COMPRESSOR
Make of compressor: Majestic
Type of system: 200 & 700 models—hermetic; 300 & 800 models—conventional
Type of compressor: Rotary
Compressor drive: 200 & 700 models—direct; 300 & 800 models—belt
Type and make of shaft seal: 200 & 700 models—none; 300 & 800 models—bellows
Location of compressor: 200 & 700 models—above; 300 & 800 models—below

REFRIGERANT
Refrigerant used: Sulphur Dioxide
Chemical formula: SO_2

LUBRICATION
Make of compressor lubricant: White refrigeration oil
When should motor be oiled: 200 & 700 models—fan motor — annually; all others—compressor motor—semi-annually

MOTOR
Make of motor: Majestic
Type of motor: 200 & 700 models—capacitor; 300 & 800 models — condenser-induction
Method of starting: Direct
How adapted to odd frequency: Hermetic type not adaptable; conventional type—change motor
What additional cost is entailed: Extra cost of motor
How adapted to direct current: Hermetic type — converter; conventional type—change motor
What additional cost is entailed: Hermetic type—cost of converter; conventional type — extra cost of motor
Type of wire or cable used: Enclosed wiring—braided
Open wiring — type "S J" rubber covered
Make of wire or cable used: Belden & Davis-Jones

CONTROL
Make of control: 200, 700, 335 & 835 models—Majestic; 345 & 845 models—Ranco or Cutler-Hammer
Type of control: Temperature
Temperature regulation method: Manual regulator
Make of overload cut-out: 335 & 835 models—Buss; 345 & 845 models — Ranco or Cutler-Hammer
How is defrosting accomplished: Shut down unit

POLICY
Who determines retail price: Distributor & retailer
By whom serviced: Dealer or distributor
Are replacement parts sold to independent service companies: No

Parker

H. C. PARKER, LTD.
Los Angeles, Calif.

Model or Catalog No.	300L	450LP 400LP	4580LP 500LP	7014LP 5510LP	1122LP
CABINET SPECIFICATIONS					
Overall dimensions, including hardware					
Height (inches)	53	56	58	59	64
Width (inches)	24	24	26	28	30
Depth (inches)	23	23	23	23	23
Thickness of insulation					
Top of cabinet (inches)	2	2	2	2	3
Sides of cabinet (inches)	2	2	2	2	3
Bottom of cabinet (inches)	2	2	2	2	3
Inside dimensions of cabinet liner					
Height (inches)	25	25	26½	27½	25
Width (inches)	18	18	20	22	18
Depth (inches)	17	17	17	17	17
Number of refrigerator doors	1	1	1	1	1
STORAGE CAPACITY					
Gross food storage capacity (cu. ft.)	4.5	4.5	5.25	6.0	4.7
Net food storage (cu. ft.) (Nema rating)	3.5	3.5	4.25	5.0	3.7
Number of shelves	2	3	3	3	2
Total shelf area (sq. ft.) (Nema rating)	6.5	6.5	9.5	10.5	8.0
ICE CUBE TRAYS					
Number of ice cube trays	2	2	2	2	2
Inside dimensions of trays (inches)					
Number of cubes produced at one freezing	56	56	56	56	56
Weight of ice cubes produced (lbs.)	6	6	6	6	6
COMPRESSOR SPECIFICATIONS					
Bore (inches)	1⅝	1⅝	1¾	1⅝	1¼
Stroke (inches)	1¼	1¼	1¼	1¼	1¼
Standard speed (rpm)	360	360	360	360	300
Number of cylinders	1	1	1	1	2
Compressor capacity (lbs.) (ASRE rating)	100	100	100	100	125
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6
Standard motor speed (rpm)	1750	1750	1750	1750	1750
Quantity of refrigerant in system (lbs.)	3	3	3	3	3
Quantity of lubricant in system	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.
WEIGHT					
Net weight of complete refrigerator (lbs.)	275	295	315	335	355
Total shipping weight (lbs.)	300	320	340	360	370
PRICE					
F. o. b. factory price	$82.50	90.00	99.00	108.00	111.50
Installed price	$99.00	129.50	143.00	157.50	165.00

Model or Catalog No.	300L	450LP 400LP	4580LP 500LP	7014LP 5510LP	1122LP
PRICE (continued)					
F. o. b. factory price	$82.50	90.00	99.00	108.00	111.50
Installed price	$99.00	129.50	143.00	157.50	165.00

Model or Catalog No.	300L	450LP 400LP	4580LP 500LP	7014LP 5510LP	1122LP
CABINET MATERIALS					
Make of cabinet					
Material used for exterior	Metal				
Make of exterior metal					
Material used for frame	Wood				
Make of interior metal	Armco				
Finish of shelves	Tinned				
INSULATION					
Make of insulation					
Nature of insulating material	Vegetable				
Bulk or formed slabs	Formed slabs				
How is insulation waterproofed					
Make of waterproofing material					
FINISH					
Cabinet finish (exterior)	Lacquer				
Make of exterior finish					
Colors offered as standard	White				
Colors offered on special order	None				
Cabinet finish (interior)	Model 300-L — Enamel; all others—Porcelain				
Make of interior finish					
HARDWARE					
Make of hardware					
Process of manufacture					
Basic metal of hardware	Brass				
Finish of hardware	Chromium				
DOORS					
Material used for breaker strip					
Material used for gasket	Rubber				
Make or brand of gasket	Wirf				
EVAPORATOR					
Make of evaporator	Model 300-L — Mullins; all others—Mullins or Parker				
Evaporator construction					
Metal used for evaporator	Steel				
Type of refrigerant control	Mullins—Low side float; Parker—Expansion valve				
Make of expansion valve	American Radiator				
Make of brine tank	None				
Solution used for brine	None				
Type and make of trays					
Dimensions of ice cube (inches)					

Model or Catalog No.	300L	450LP 400LP	4580LP 500LP	7014LP 5510LP	1122LP
COMPRESSOR					
Make of compressor	Parker				
Type of system	Conventional				
Type of compressor	Reciprocating				
Compressor drive	Belt				
Type and make of shaft seal	Sylphon				
Location of compressor	Model 300-L—Above; others—Below				
CONDENSER					
Make of condenser	Bush				
Fan or natural draft cooling	Fan				
Type of condenser	Finned tube				
REFRIGERANT					
Refrigerant used	Sulphur Dioxide & Methyl Chloride				
Chemical formula	SO_2 & CH_3Cl				
LUBRICATION					
Make of compressor lubricant	Calol				
How often should motor be oiled	Monthly				
MOTOR					
Make of motor	Wagner				
Type of motor	Repulsion-Induction				
Method of starting	Direct				
How adapted to odd frequency					
What additional cost is entailed					
How adapted to direct current					
What additional cost is entailed					
Type of wire or cable used	Rubber covered				
CONTROL					
Make of control	Bishop & Babcock				
Type of control	Temperature				
Temperature regulation method	Manual regulator				
Make of overload cut-out	Bishop & Babcock				
How is defrosting accomplished	Shut down unit				
POLICY					
Who determintes retail price	Retailer				
Guarantee period on cabinet	Three years				
Guarantee period on system	Three years				
By whom serviced	Dealer				
Are replacement parts sold to independent service companies	Yes				

Apex, Gibson, Starr-Freeze and Puritan Specifications

Apex
APEX ELECTRICAL MFG. CO.
1067 E. 152 St., Cleveland, Ohio

Gibson
GIBSON ELECTRIC REFRIGERATOR CO.
Greenville, Mich.

Starr-Freeze
STARR CO.
Richmond, Ind.

Puritan
QUALITY PRODUCTS, INC.
Dayton Industries Bldg., Dayton, Ohio

Model or Catalog No.	Apex L-500	Apex L-600	Apex L-800	Apex P-600	Apex P-800	Apex L-410	Apex L-610	Gibson SG-35	Gibson SG-47	Gibson SG-63	Gibson SG-82	Gibson SG-825	Gibson PG-148
CABINET SPECIFICATIONS													
Overall dimensions, including hardware													
Height (inches)	49½	51½	57	51½	57	53½	58½	45	49¾	52⅛	54⅝	54⅝	66⅞
Width (inches)	26	28½	31½	28½	31½	24¾	27¾	24⅝	24⅝	29⅞	35⅞	35⅞	44¼
Depth (inches)	24¾	26½	26½	26½	26½	23	25	27⅝	27⅝	28⅝	29⅝	29⅝	33
Thickness of insulation													
Top of cabinet (inches)								2	2	2	2	2	4
Sides of cabinet (inches)								3	3	3½	3½	3½	4
Bottom of cabinet (inches)								3½	3½	4	4	4	4½
Inside dimensions of cabinet liner													
Height (inches)	24¼	24¾	30	24¾	30	25½	31	20	25¼	27⅞	29⅛	29⅛	41 †41
Width (inches)	19¾	22	25¼	22	25¼	19¾	22	17⅜	18⅜	22⅝	27⅝	27⅝	20½ †11½
Depth (inches)	16½	18	18	18	18	15¾	17½	17	17	17	17	17	19 †19
Thickness of exterior metal (gauge)													
Thickness of interior metal (gauge)													
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	2	2	2
STORAGE CAPACITY													
Gross food storage capacity (cu. ft.)	4.4	5.6	7.8	5.6	7.8	4.6	6.9	3.5	4.7	6.3	8.15	8.15	14.8
Net food storage (cu. ft.) (Nema rating)	3.8	4.8	7.0	4.8	7.0	4.0	6.2	3.0	4.09	5.53	7.28	7.28	12.5
Number of shelves	4	4	5	4	5	4	5	2	3	4	4	4	5
Total shelf area (sq. ft.) (Nema rating)	7.7	9.1	13.7	9.1	13.7	7.5	12.4	6.3	8.02	11.59	13.4	13.4	20.1
Greatest distance between any two shelves	5¾	5¾	7½	5¾	7½	7¼	7½						
Shortest distance between any two shelves	5	3¾	4¾	3¾	4¾	5¾	3½						
ICE CUBE TRAYS													
Number of ice cube trays	2	3	4	3	4	2	3	2	3	4	5	5	8
Inside dimensions of trays (inches)													
Length (at top of tray)	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜						
Width (at top of tray)	5	5	5	5	5	5	5						
Depth	1½	1½	1½	1½	1½	1½	1½						
Number of cubes produced at one freezing	56	84	112	84	112	56	84	42	63	105	126	126	210
Weight of ice cubes produced (lbs.)	3½	5¼	7¼	5¼	7¼	3½	5¼	2½	3¾	6¼	7½	7½	12½
COMPRESSOR SPECIFICATIONS													
Bore (inches)	1⅜	1⅜	1⅜	1⅜	1⅜	1⅜	1⅜	1-1/16	1-1/16	1-1/16	1-1/16	1-1/16	1-1/16
Stroke (inches)	1⅜	1⅜	1⅜	1⅜	1⅜	1⅜	1⅜	11/16	11/16	11/16	11/16	11/16	11/16
Standard speed (rpm)	400	450	450	450	450	500	500	1730	1730	1730	1730	1730	1730
Number of cylinders	1	1	1	1	1	1	1	2	2	2	2	2	2
Compressor capacity (lbs.) (ASRE rating)	80	95	110	95	110	80	95	65	65	75	109	109	...
Motor size (hp.)	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1-5	1-5	1-5	1-5	1-5	(2) 1-5
Standard motor speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1745	1745	1745	1745	1745	1745
Quantity of refrigerant in system (lbs.)	4	4½	5	4½	5	1½	1½	25 oz.	25 oz.	25 oz.	25 oz.	25 oz.	(2) 25 oz.
Quantity of lubricant in system	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.	8 oz.	8 oz.	14 oz.	14 oz.	14 oz.	14 oz.	14 oz.	(2) 14 oz.
WEIGHT													
Net weight of complete refrigerator (lbs.)	290	309	387	334	414	....	....	330	382	420	510	510	950
Total shipping weight (lbs.)	367	423	473	448	500	....	....						
PRICE													
F. o. b. factory price													
Retail price, without installation													
Installed price (zone B from Cleveland)	$169.50	197.50	249.50	244.50	299.50	119.50	149.50						
CABINET MATERIALS													
Make of cabinet	L-410 and L-610—Rex; all others—Leonard							Gibson					
Material used for exterior	Metal							Metal					
Make of exterior metal								Armco					
Material used for frame	Wood							Steel					
Make of interior metal								Armco					
Finish of shelves	Tinned							Tinned					
INSULATION													
Make of insulation	Leonard—Celotex and Balsam Wool; Rex—Balsam Wool							Balsam Wool					
Nature of insulating material	Vegetable							Vegetable					
Bulk or formed slabs	Formed slabs							Formed slabs					
How is insulation waterproofed	Hydrolened							Hydrolened paper					
Make of waterproofing material	Hydrolene							Hydrolene					
FINISH													
Cabinet finish (exterior)	Leonard L Models—lacquer; Leonard P Models—Porcelain; Rex—enamel							Lacquer or porcelain					
Make of exterior finish								Lacquer—Bradley-Vrooman; porcelain—Ferro					
Colors offered as standard	White							SG-82B—black; others—white					
Colors offered on special order	None												
Cabinet finish (interior)	Porcelain							Porcelain					
Make of interior finish								Ferro					
HARDWARE													
Make of hardware	Grand Rapids Brass							Grand Rapids Brass					
Process of manufacture	Stamped							Stamped					
Basic metal of hardware	Brass							Brass					
Finish of hardware	Chromium							Chromium					
DOORS													
Material used for breaker strip	Rex—Wood; all others—Panelyte							Wood					
Material used for gasket	Rubber							Rubberized fabric					
Make or brand of gasket								Backstay Welt					
EVAPORATOR													
Make of evaporator	Rex—Apex; all others—Mullins							Gibson					
Evaporator construction	Apex—shell; all others—tubular							Tubular					
Metal used for evaporator	Apex—copper; all others—porcelain on steel							Brass and copper					
Type of refrigerant control	Mullins—low side float; Apex—expansion valve							Expansion valve					
Make of expansion valve								American Radiator					
Make of brine tank								None					
Solution used for brine	Apex—Alcohol and water							None					
Type and make of trays	Leonard—rubber grid							Aluminum					
Dimensions of ice cube (inches)	1 3/16x1¼x1½							1-3/16x1-1/4x1-7/16					
SPECIAL FEATURES	Leonard—interior light and sliding shelves							Model PG-148—light and water cooling tank					
COMPRESSOR													
Make of compressor	Apex							Gibson					
Type of system	Conventional							Conventional					
Type of compressor	Reciprocating							Reciprocating					
Compressor drive	Belt							Direct					
Type and make of shaft seal	Bellows							Bellows					
Location of compressor	Below							Above					
CONDENSER													
Make of condenser	Bush							Bush or McCord					
Fan or natural draft cooling	Fan							Fan					
Type of condenser	Finned tube							Finned tube					
REFRIGERANT													
Refrigerant used	Sulphur Dioxide							Sulphur Dioxide					
Trade name													
Chemical formula	SO_2							SO_2					
LUBRICATION													
Make of compressor lubricant	Sun							Sunisco					
How often should motor be oiled	Semi-annually							Semi-annually					
MOTOR													
Make of motor	General Electric/Apex							Delco					
Type of motor	Capacitor							Repulsion-Induction					
Method of starting	Direct							Direct					
How adapted to odd frequency	Change motor							Change motor					
What additional cost is entailed													
How adapted to direct current	Change motor							Change motor					
What additional cost is entailed													
Type of wire or cable used	Rubber covered							S. J. 16 rubber covered					
Make of wire or cable used								General Electric Co.					
CONTROL													
Make of control	Leonard—Penn; Rex—General Electric							Ranco					
Type of control	Temperature							Temperature					
Temperature regulation method	Manual regulator							Manual regulator					
Make of overload cut-out	Leonard—Penn; Rex—General Electric							Ranco					
How is defrosting accomplished	Shut down unit							Semi-automatic					
POLICY													
Who determines retail price	Manufacturer												
Guarantee period on cabinet	Leonard—three years; Rex—one year							One year					
Guarantee period on system	L-410 & L-610—three years; others—one year							Three years					
By whom serviced	Dealer							Dealers					
Are replacement parts sold to independent service companies	No							No					

†Freezing compartment

Model or Catalog No.	Starr-Freeze T	Starr-Freeze R	Starr-Freeze W	Starr-Freeze M	Starr-Freeze O	Starr-Freeze P	Starr-Freeze P	Starr-Freeze G	Puritan L-42	Puritan L-62	Puritan L-82	Puritan P-48	Puritan P-65	Puritan P-83
CABINET SPECIFICATIONS														
Overall dimensions, including hardware														
Height (inches)	50¼	55¾	55¾	57⅜	57⅜	64¼	60½	67	52	56⅜	58	54	58¾	58
Width (inches)	20½	24⅝	24⅝	32¼	32¼	25	46¼	49½	23¾	26¼	32	24	28¼	32¼
Depth (inches)	19⅞	22⅝	22⅝	26	26	22½	26	26	22	24	26	26	26¾	27½
Thickness of insulation														
Top of cabinet (inches)	2	3	3	3	3	2¼	3⅛	3⅛	3	3	3	2½	3	3
Sides of cabinet (inches)	2	2¼	2¼	3	3	2¼	3⅛	3⅛	3	3	3	2½	3	3
Bottom of cabinet (inches)	2	2½	2½	4	4	2¼	3⅛	3⅛	3	3	3	2½	3	3
Inside dimensions of cabinet liner														
Height (inches)	25⅜	27½	27½	29½	29½	36	29¼	35	26¼	29¾	29¾	26¼	30	30
Width (inches)	15½	19¾	19¾	25¼	25¼	20	39½	42½	19	20½	25	17¾	21¼	25
Depth (inches)	13⅜	22⅝	16⅛	16¼	16¼	14¾	16½	16½	15	16½	17½	18	18	18¾
Thickness of exterior metal (gauge)									20	20	20	20	20	20
Thickness of interior metal (gauge)									20	20	20	20	20	20
Number of refrigerator doors	1	1	1	1	2	1	2	2	1	1	1	1	1	1
STORAGE CAPACITY														
Gross food storage capacity (cu. ft.)	3.66	5.0	5.0	7.0	7.0	6.14	11.0	14.2	4.7	6.5	8.1	4.8	6.5	8.0
Net food storage (cu. ft.) (Nema rating)									4.1	5.9	7.5	4.2	5.9	7.4
Number of shelves	3	4	4	4	4	5	4	5	3	4	4	3	4	4
Total shelf area (sq. ft.) (Nema rating)	4.4	9.0	9.0	13.0	13.0	9.8	16.25	20.75	7.0	11.0	13.5	8.0	10.0	14.75
Greatest distance between any two shelves	12¾	6¼	6¼	6⅝	6⅝	7½	12	7¼	6½	6½	7	7	6	6
Shortest distance between any two shelves	6¼	5⅛	5⅛	5¾	5¾	5⅝	6⅛	4⅝	6	5	5	6½	6	6
ICE CUBE TRAYS														
Number of ice cube trays	2	2	3	4	4	4	6	8	2	2	3	2	2	3
Inside dimensions of trays (inches)														
Length (at top of tray)	7⅜	11	11	11	11	11	11	11	9¼	9¼	9¼	9¼	9¼	9¼
Width (at top of tray)	3⅜	5¾	5¾	5¾	5¾	5¾	5¾	5¾	5	5	5	5	5	5
Depth	1¼	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	30	56	84	112	112	112	168	224	56	56	84	56	56	84
Weight of ice cubes produced (lbs.)	2½	5	7½	10	10	10	15	20	4	4	6	4	4	6
COMPRESSOR SPECIFICATIONS														
Bore (inches)	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625						
Stroke (inches)	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64						
Standard speed (rpm)	300	300	425	425	425	425	400	400						
Number of cylinders	1	1	1	1	1	1	2	2						
Compressor capacity (lbs.) (ASRE rating)	95	95	130	130	130	130	253	253	90	90	90	90	90	90
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-4	1-6	1-6	1-6	1-6	1-6	1-6
Standard motor speed (rpm)	1750	1750	1750	1750	1750	1750	1750	1750						
Quantity of refrigerant in system (lbs.)	3½	5½	6	6¼	6¼	6¼	9¼	9⅝	4	4	5	4	4	5
Quantity of lubricant in system	26 oz.	29 oz.	30 oz.	30 oz.	30 oz.	30 oz.	38 oz.	38 oz.	20 oz.	20 oz.	20 oz.	20 oz.	20 oz.	20 oz.
WEIGHT														
Net weight of complete refrigerator (lbs.)	212	265	268	359	368	329	526	608	272	331	376	317	362	408
Total shipping weight (lbs.)	290	368	368	464	474	405	665	760						
PRICE														
F. o. b. factory price														
Retail price, without installation														
Installed price (zone B from Cleveland)	$99.50	149.50	195.00	225.00	235.00	215.00	335.00	395.00						
CABINET MATERIALS														
Make of cabinet	Starr-Freeze								L models—Illinois; P models—Eagle					
Material used for exterior	Metal								Metal					
Make of exterior metal	Armco								Armco					
Material used for frame	Wood													
Make of interior metal	Armco								Armco					
Finish of shelves	Tinned								Tinned					
INSULATION														
Make of insulation	Zilem								Dry-Zero					
Nature of insulating material	Vegetable								Vegetable					
Bulk or formed slabs	Formed slabs								Formed slabs					
How is insulation waterproofed	Waterproofed paper													
Make of waterproofing material														
FINISH														
Cabinet finish (exterior)	Model R—lacquer; others—lacquer or porcelain								L models—lacquer; all others porcelain					
Make of exterior finish														
Colors offered as standard	White								White					
Colors offered on special order														
Cabinet finish (interior)	Porcelain								Porcelain					
Make of interior finish														
HARDWARE														
Make of hardware									National Lock					
Process of manufacture									Stamped					
Basic metal of hardware	Brass								Brass					
Finish of hardware	Chromium								Chromium					
DOORS														
Material used for breaker strip									Tylac					
Material used for gasket	Rubberized fabric								Rubber					
Make or brand of gasket									Miller					
EVAPORATOR														
Make of evaporator	Starr-Freeze								Mullins					
Evaporator construction	Shell								Shell					
Metal used for evaporator	Brass and copper								Steel					
Type of refrigerant control	High side float								Low side float					
Make of expansion valve	None								None					
Make of brine tank	None								None					
Solution used for brine	None								None					
Type and make of trays	Aluminum								Aluminum					
Dimensions of ice cube (inches)	1¼								1½x1¼x1¼					
SPECIAL FEATURES	Interior light in DeLuxe models Vegetable tray in DeLuxe models													
COMPRESSOR														
Make of compressor	Starr-Freeze								Auto Compressor Co.					
Type of system	Conventional								Conventional					
Type of compressor	Reciprocating								Reciprocating					
Compressor drive	Belt								Belt					
Type and make of shaft seal	Bellows													
Location of compressor	Below								Below					
CONDENSER														
Make of condenser	Fan								McCord					
Fan or natural draft cooling	Fan								Fan					
Type of condenser	Finned tube								Finned tube					
REFRIGERANT														
Refrigerant used	Sulphur Dioxide								Sulphur Dioxide					
Trade name									Ansul					
Chemical formula	SO_2								SO_2					
LUBRICATION														
Make of compressor lubricant	Refrigeration oil								PRK-40—Russian mineral oil					
How often should motor be oiled	Every 4 or 5 months								Semi-annually					
MOTOR														
Make of motor									Delco					
Type of motor	Repulsion-Induction								Repulsion-Induction					
Method of starting	Direct								Direct					
How adapted to odd frequency	Change motor								Change motor					
What additional cost is entailed	Regular													
How adapted to direct current	Change motor								Change motor					
What additional cost is entailed	Regular													
Type of wire or cable used														
Make of wire or cable used														
CONTROL														
Make of control									Ranco					
Type of control	Temperature								Temperature					
Temperature regulation method	Manual regulator								Manual regulator					
Make of overload cut-out									Ranco					
How is defrosting accomplished	Shut down unit								Shut down unit					
POLICY														
Who determines retail price	Retailer								Manufacturer					
Guarantee period on cabinet	Model R—one year; all others—three and one-half years (material and workmanship)								One year					
Guarantee period on system	Model R—one year; all others—three and one-half years (material and workmanship)								Three years					
By whom serviced	Dealer and distributor								Dealer or distributor					
Are replacement parts sold to independent service companies	Yes								No					

AT THE VITAL SPOT

Haynes Stellite, the cobalt-chromium-tungsten alloy, is receiving an enthusiastic welcome by the electric refrigeration industry. Highly resistant to wear and corrosion, it gives impressive performance *at the vital spot* in the form of Mayson Haynes Stellite tipped needle valves—now standard with a number of leading manufacturers.

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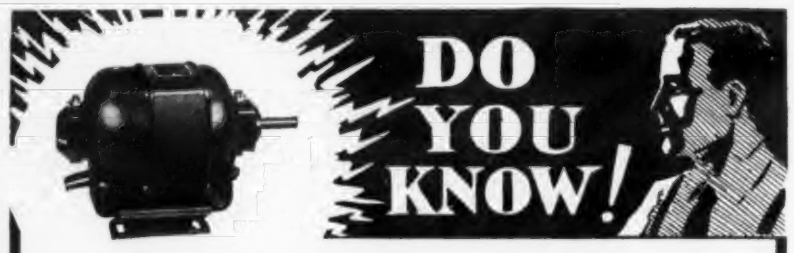

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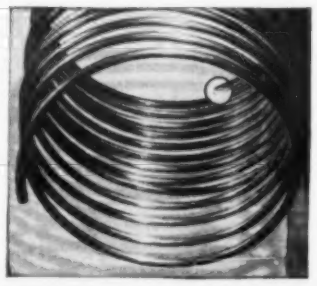

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FRENCH REFRIGERATION TUBES

What Every Young Inventor Ought to Know

Simple Facts About Fundamental Patent Laws Written for the Layman

By C. F. CAREY
Public Relations Counselor

NOTE—This is the second half of an article giving valuable advice to inexperienced inventors and containing references which will be helpful to business executives interested in patent matters.

The first instalment of Mr. Carey's article was published in Electric Refrigeration News, June 1, 1932 (Engineering Section, pages 5 and 6).

PATENT LITIGATION

Do anything and everything to avoid bringing suit at law and to avoid being drawn into a lawsuit. It will be found the better policy to compromise and arbitrate every patent controversy which it is at all possible to arbitrate. The best way to do this is for the inventor to keep adequate records of his inventions, their development and reduction to practice, and early commercial history. When proof of the prior right of a party can be produced in readily available form with no doubt as to its authenticity, much litigation can be avoided before passion and prejudice plunge the respective parties into expensive and many times unnecessary legal disputes.

On the other hand, if litigation cannot be avoided, the necessity for adequate records of this kind is even more important, for thousands of dollars are lost annually by the failure of inventors and their associates to produce decisive evidence in the course of litigation.

In bringing suit against another inventor for infringement and the like, the chances are largely against the complainant winning the suit. The records of court cases show that the complainant loses more often than he wins, and this because of the multiplicity of points of attack open to the *defendant;* who may eventually find a flaw in the patent itself, or in the acts of the inventor, the patent examiner, the attorney who drew up and prosecuted the patent application, the attorney who has charge of the suit at law, the lower court, or a manufacturer under the patent.

Milton Wright in "Inventions and Patents—Their Development and Promotion" (McGraw-Hill Book Co.) treats this subject in a thorough manner and in part says:

"When you sue for infringement your action is brought in a Federal Court. The suit may be an action in law in which you seek money damages; it may be an action in equity, in which you seek an injunction to restrain the infringer from further infringement; or it may be for both forms of relief."

"An alleged infringer who desires to contest a suit for infringement has 28 defenses to make, as follows:

"1. That the matter covered by the patent was not a proper subject for a patent.

"2. That it is not invention.

"3. That it is not novel.

"4. That it was not useful.

"5. That you actually abandoned it.

"6. That you constructively abandoned it, by not applying for a patent within the time allowed by law.

"7. That the invention claimed in the patent is different from what you applied for.

"8. That the invention was made by someone other than the patentee.

"9. That someone was a joint inventor with you who appeared as the sole applicant for the patent.

"10. That two of you claim to be the joint inventors, whereas only one was the actual inventor.

"11. That your description and specification was made, for purposes of deception, to cover more or less than the entire truth necessary.

"12. That the specification is not such that any person skilled in the art to which it applies can use it.

"13. That your patent claims are indistinct.

"14. That you delayed unreasonably to enter a necessary disclaimer.

"15. That without every statutory foundation necessary you surrendered and re-issued your original patent.

"16. That the re-issue patent's claims are broader than the original patent's, and that the re-issue was not applied for until a long time after the grant of the original patent.

"17. That the re-issue patent covers a different invention from your original patent.

"18. That what you claim in your patent is substantially the same as you claimed in a prior patent.

"19. That your patent was repealed.

"20. That the patent expired before the infringement took place.

"21. That you failed to mark every one of your patented articles "Patented" or else failed to notify the alleged infringer.

"22. That you have no title to the patent.

"23. That the alleged infringer has a license permitting him to do what you accuse him of.

"24. That the alleged infringer had a release discharging him from liability for the infringement you alleged.

"25. That he did not commit any infringement.

"26. That you have no right to enforce any action against him.

"27. That the statute of limitation bars your action.

"28. That the Commissioner of Patents in granting you a patent exceeded his authority."

* * *

This outline of patent infirmities is a comprehensive one, to be sure, and it may be said with perfect safety that it is a rare patent indeed which has none of the ills set forth. It demonstrates the necessity of having your own patent unassailable. In fact, in the vast majority of cases the battle rages chiefly around the validity of the patent upon which suit is brought. The time to have guarded against such an attack was when preparing and prosecuting the patent application.

* * *

"The records of the United States Courts show that some concerns apparently have planned and launched campaigns of threats of infringement suits against rivals and their customers. To further such a scheme some of them have secured vague patents which would seem to furnish a legal basis for such tactics and even the collection of royalties.

* * *

"The mere name of 'Patent,' even though it relates to a trivial invention and an invalid patent, is of value to its holder, because people prefer not to come into conflict with it. The owner of the Selden patent exacted tribute several years from automobile manufacturers before it was held invalid."

* * *

"Threats of infringement suits have been made in bad faith by some firms as attested by the failure or refusal, in most instances, to institute legal proceedings to determine the question of infringement. They usually involve an element of false claiming with respect to the patent and therefore a fear that the infringement suit would be lost. The claims of the patent may be shown to include what is already public property.

* * *

"The Courts, in view of the prevalence of worthless patents, refuse to assume the validity of the patents, and therefore refuse to grant a preliminary injunction against an alleged infringer unless the validity of the patent has been established by the courts or by common consent."

* * *

PATENT INVESTIGATIONS

To invest money in any sort of patent property is dangerous unless an investigation shows that the way is clear to acquire its full benefit. Infringements, anticipations rendering patents invalid, and other matters of similar character constantly cost inventors and manufacturers thousands of dollars through their failure to be fully informed as to the exact status of their patents. Many inventors are inclined to believe that once they possess a beautifully lithographed United States Patent bearing the signature of the Commissioner of Patents with a gold seal and ribbons attached, they have a document of priceless value. Nothing could be further from the facts.

It should first be known whether the patent is valid, for the mere issuance is no guarantee of this. Second, it should be known whether articles manufactured pursuant to the patent will be an infringement of some other patent or what has been previously done in the art, if the inventor or manufacturer is to proceed intelligently and with safety.

Third, it should be known what the extent of the field ahead is before spending large sums for research, experimental work or manufacturing facilities. If the field for the invention is limited, the expenditures for developing and manufacturing it should be correspondingly limited.

Unfortunately inventors and manufacturers overlook this important matter of patent and industrial research or conduct such investigations in a haphazard manner. The inventor's chief concern is in obtaining a patent for his invention, while the manufacturer can see only the sales possibilities of the device and is therefore desirous of plunging into the manufacture of it with the least possible delay.

The inventor's disappointment comes when he discovers that he has obtained a patent which has little commercial value to him because of something which he overlooked in his haste to get it put through. The manufacturer, on the other hand, may find that his impatience has placed him in a worse fix. He may make a huge commercial success in marketing his device, only to be confronted with the fact that it is an infringement of some obscure patent, oftentimes held by a competitor for the very purpose of keeping competition such as this out of the field. We are all familiar with the Better Business Bureau's slogan, "Investigate before you Invest." This can well be applied to the business of Invention and Patents. At the present time some 90,000 patent applications are filed annually while the records for many years back show that approximately one-half of the applications filed result in issued patents. Assuming that the minimum outlay by the inventor for filing fees, attorneys' and draftsmen's fees averaged only $100 per application, the money wasted through this source alone amounts to millions of dollars annually. Most of these applications fail to get through simply because they lack invention or the claims and specifications are not properly drawn and prosecuted.

CONCLUSION

To one unfamiliar with the fundamentals of patents and patent laws, it may seem that we are of the belief that few patents are of value, or, it may even appear to some that we are seeking to discourage inventors. On the contrary, we have only the highest regard for patent protection and the monopoly it affords the owner of a patent but this does not mean that we are of the belief that every patent affords such protection or is of value.

A patent is of value only if it is a GOOD patent on a GOOD invention. It is valueless if either of these two fundamentals is lacking.

Inventions are good only if they have a commercial value—either a present one or a value which may be developed.

A person may obtain a legally good patent upon a commercially worthless invention. Likewise, he may obtain a worthless patent upon a really good invention. In either case the patent is not GOOD in the accepted sense.

To the inventor or prospective purchaser of a patent our suggestion is "look before you leap." If you are reasonably assured that the invention is patentable and that it would be of commercial value then proceed with the preparation and prosecution of the application, using the utmost diligence and employing the best skill available. Invention is a business but you cannot succeed in it if you tackle it with your eyes shut.

PATENT DECISIONS

Since the object of this article is to present in a brief and concise manner information on patents and patent law so it may be easily understood by the

(Concluded on Page 17, Column 1)

STELLITE NEEDLE VALVES

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What Inventors Ought to Know

(Concluded from Page 16, Column 5)

average man, we will not go extensively into the various phases of patent litigation. Instead we will give one or several decisions bearing on each point we consider the reader should at least be familiar with.

Description of the Invention

"That the description of an art must disclose the means, by which it can be successfully practiced, with sufficient clearness to enable those skilled in the art to carry it into effect, unless such means are obvious."

—Tilghman v. Procter (1881), 102 U. S. 707; 19 O. G. 859.

* * *

"That a process cannot be inferred by the Court or the public from a description of its product."—Western Electric Co. v. Ansonia Co. (1885)—114 U. S. 447; 31 O. G. 1305.

* * *

"That the failure to describe an essential element renders the whole description defective."—Carr v. Rice (1856), I Fisher 198.

Utility

"The utility of the invention is an essential requisite to patentability. To possess utility, an invention must be capable of producing a result, and that result must be a good result; the capability of being so applied in practical affairs as to prove advantageous in the ordinary pursuits of life."—Rowe v. Blanchard—18 Wis. 441.

Abandonment

"The final requisite of a patentable invention is that it has not been abandoned or dedicated to the public. Experimental use is never public use within the meaning of the statute, if it is conducted in good faith for the purpose of testing the qualities of the invention and for no other purposes not naturally incidental to that."—Beadle v. Bennett, 122 U. S. 77 1886.

* * *

"Where the main object of the use is not profit, and improvement was only an incidental aim, the use is not experimental in the eye of the law, though incidental profit is not inconsistent with use being only experimental."—Westinghouse Electric & Mfg. Co. v. Saranac Lake Electric Light Co. 108 F. R. 230, 1901, 113, F. R. 888, 1902.

* * *

"Absence of profit is not consistent with use being not experimental, but public."—Thomson-Houston Electric Co. v. Lorain Steel Co. 117 F. R. 252, 1902.

Substitution of Material

"The mere substitution for one material of another known to possess the same qualities, though not in the same degree, is not patentable, even though better results are secured."—Many cases cited in U. S. Code Ann.: Title 35; Sec. 31.

* * *

"There being no invention in substituting superior for inferior materials, there is certainly none in substituting one well known form of a particular material, for another well known form of the same material."—Brush Electric Co. v. Julian Electric Co. 41 F. R. 693 (1890).

* * *

"A patent cannot be taken out for an article old in purpose and shape and use, when made for the first time out of an existing material, and with accompaniments before applied to such an article, merely because the idea has occurred that it would be a good thing to make the article out of that particular old material."—Gardner v. Herz, 118 U. S. 180; 30 L. Ed. 158; 6 S. Ct. 1027.

* * *

"A mere substitution for an element in a combination producing no change except a better result is not patentable."—Hotchkiss v. Greenwood, 11 How. 248; 13 L. Ed. 683.

* * *

"Mere change of material is not sufficient to constitute invention, the purpose and the means being the same."—Hicks v. Kelsey, 85 U. S. 670; 21 L. Ed. 852.

* * *

"So far as invention is concerned, it is immaterial whether these stiffening strips are of paste board, card board, or of wood veneer; all of these materials being well known in the paper box art, and the use of anyone or all of them wherever desired involves nothing more than a mere selection or choice."—In re Ferres, C. D. 1913, 436; 192 O. G. 745; 40 Ap. D. C. 584.

* * *

"The substitution of one material for another, even when the substitution produces a beneficial result, where the material substituted was known, it is not invention."—Interior v. Perkins, 80 Fed. 528; 25 C. C. A. 613.

Improvement in Material

"It is not enough that the new manufacture, because of the fitness of the material to the purposes of the article, has obviated innumerable objections inherent in prior manufactures and superceded them in the trade. It must possess an advantage and novelty in form or construction beyond the ability of a mechanic of ordinary skill and intelligence, or be the result of means or methods devised by the maker."—Kilbourne v. Bingham, 50 Fed. 687; 1C. C. A. 619.

* * *

"An article of manufacture which differs from other similar articles only in degree of quality is not patentable."—Blumenthal v. Burrell, 53 Fed. 105; 3C. C. A. 462.

* * *

"Mere improvement in material or quality is not patentable."—Heald v. Rice, 104 U. S. 737; 26 L. Ed. 910.

Valuable

The Denney Tag Co.
West Chester, Pa.
June 7, 1932.

Editor:

Have read the first instalment of Mr. Carey's article "What Every Young Inventor Ought to Know." It is well written and it is interesting and should prove of considerable value to many people.

GEORGE M. HUEY,
President.

Mechanical Skill

"Invention or discovery is the requirement which constitutes the foundation of the right to obtain a patent; and it was decided by this Court, more than a quarter of a century ago, that unless more ingenuity and skill were required in making or applying the said improvement than are possessed by an ordinary mechanic acquainted with the business, there is an absence of that degree of skill and ingenuity which constitute the essential element of every invention."—U. S. Supreme Court decision in the case of Dunbar v. Meyers, 94 U. S. 187; 24 L. Ed. 34.

* * *

"The line between invention and mechanical skill is often exceedingly difficult to draw, but the application of an old device to a use which was only new in the particular machine to which it was applied was nothing more than would have been suggested to an intelligent mechanic who had before him the anticipating references."—U. S. Supreme Court decision in Mast, Foos & Co. v. Stover Mfg. Co. C. D. 1900; 91 O. G. 1239.

* * *

"No patent should issue, nor will it be valid if issued, for an improvement which is merely a new application of knowledge already possessed by those skilled in the art—a mere modification, variation, or carrying forward of the principle involved in a previous invention or discovery."—Court of Appeals, Dist. of Col. In re Klemm; C. D. 1903, 103 O. G. 1682.

* * *

"It is not every improvement that will entitle a party to a patent therefor, since it must be shown to be the result of an act of invention as distinguished from an act of applied skill by those familiar with the state of the art."—In re Klemm; C. D. 1903; 103 O. G. 1682.

* * *

"Speaking of a simple device which the court held not to be invention, Justice Matthews (U. S. Supreme Court, 1885) said: "It seems to us not to spring from that intuitive faculty of the mind put forth in search for new results or new methods, creating what had not before existed, or bringing to light what lay hidden from vision; but, on the other hand, to be the suggestion of that common experience which arose spontaneously, and by a necessity of human reasoning, in the minds of those who became acquainted with the circumstances with which they had to deal."—Hollister v. Benedict Mfg. Co., 113 U. S. 72.

Equivalents

"It is not invention to change a process, machine, manufacture or composition of matter, by substituting an equivalent for either of its parts; unless the new part, not only performs the functions of the part for which it was substituted, BUT ALSO PERFORMS ANOTHER FUNCTION, BY ANOTHER MODE OF OPERATION."—Smith v. Nichols, 21 Wallace 119, (1874).

* * *

"One thing may accordingly be an equivalent of another, though it does more than that other, but it cannot be such an equivalent if it does less."—Bliss v. Haight, 3 Fisher, 626 (1869).

* * *

"The making of a device either in whole or in part of materials better adapted to the purpose for which it is used than materials of which those of prior art were made, and for that reason better and cheaper, UNLESS THE MODE OF OPERATION IS THEREBY CHANGED, does not constitute patentable invention."—Cover v. American Thermo-Ware Co. et. al., Circuit Court, N. Dist. Illinois, E. D. (April 25, 1911.) 188 F. R. 670.

Result and Effect

"A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures against the avowed policy of the patent laws."—Le Roy v. Tatham, 14 How. 156; 14 L. Ed. 367.

* * *

"He claims a patent for an effect produced by the use of electro-magnetism, distinct from the process or machinery necessary to produce it. No patent can lawfully issue for such a claim."—O'Reilly v. Morse, 15 How. 62; 14 L. Ed. 601.

"The substitution of an old element in a combination of an element performing a similar function but constructed in a different way, does not render the combination itself patentable where there is no resultant change in the operation. In such a case the substituted element may be superior. The invention lies in the element and not in the combination."—Re Hawley, 26 Fed. Cas. Dist. Col. P. 324, 330. Sept., 1928.

Carrying Forward Old Idea

"A mere carrying forward of an original patented conception involving only change of form, proportions, or degree, or the substitution of equivalents doing the same things as the original invention by substantially the same means is not such an invention as will sustain a patent, even though the changes may produce better results than prior inventions. It is not by any means every improvement on former inventions that is patentable."—Court of Appeals, Dist. of Col. In re Iwan; C. D. 1901, 95 O. G. 441.

* * *

"A mere carrying forward of an original conception patented, a new and more extended application of it involving change only in form, proportions, or degree, the substitution of equivalents doing the same thing as the original invention by substantially the same means with better effects, is not such invention as will sustain a patent.

"It is only the invention of what is new and of practical utility, and not the arrival at comparative superiority or greater excellence in that which is already known, which the law protects as exclusive property and which it secures by patents."—Marshutz v. Commissioner of Patents, C. D. (1898) 85 O. G. 778.

Change of Size or Degree, and Strengthening

"It is not invention to merely improve a device so that it is stronger or more durable."—Peters v. Hanson, 129 U. S. 541; 9 S. Ct. 393.

* * *

"It is not invention to so enlarge or strengthen a machine that it will operate on larger materials than before."—American Well Works v. F. C. Austin Mfg. Co. 98 F. R. 993, (1900).

* * *

"Superiority due mainly to increased weight and strength are not elements of invention."—Frazer v. Gates, 85 Fed. 441; 24 C. C. A. 180.

* * *

"It is not invention to change the size or degree of a thing or of any feature or function of a machine or manufacture."—Baldwin v. Kresl, 76 F. R. 826 (1896).

Commercial Use

"The fact that a patented article has gone into extensive or general use is evidence of its utility and in doubtful cases may be considered as evidence of invention, BUT IT IS NOT CONCLUSIVE, AND WHERE THERE IS NO INVENTION THE EXTENT OF THE USE IS IMMATERIAL."—Boss Mfg. Co. v. Thomas, C. D. 1911. 162 O. G. 1183.

* * *

"A patent should not be granted merely because a device or combination may possess great advantages, thereby bringing it into immediate use, as IT IS ONLY WHEN THE QUESTION OF NOVELTY IS IN DOUBT that the fact that the device has gone into commercial use, displacing others employed for a like purpose or supplying the place of others whose intrinsic defects have prevented their general adoption and use, is sufficient to turn the scales in favor of invention."—Potts v. Creager, C. D. 1895; 143, 70 O. G. 494, 155 U. S., 597, 609.

Knowledge After the Fact

"It should be borne in mind that this process was not one accidentally discovered, but was the result of a long search for the very purpose. The surprise is that the manufacturers of steel, having felt the want for so many years, should never have discovered, from the multiplicity of patents and of processes introduced into this suit and well known to the manufacturers of steel, THAT IT WAS BUT A STEP FROM WHAT THEY ALREADY KNEW TO THAT WHICH THEY HAD SPENT YEARS IN ENDEAVORING TO FIND OUT. It only remains now for the wisdom which comes after the fact to teach us that Jones (inventor) DISCOVERED NOTHING, INVENTED NOTHING, ACCOMPLISHED NOTHING."—Carnegie v. Cambria, 185 U. S. 403, 46 L. Ed. 968; 22 S. Ct. 698.

* * *

"With all due respect to the Patent Office, I must say that it seems to me all these patents in suit, as well as others in the record, were very improvidently issued. They may cover improvements in this class of device, but all improvements do not involve or imply invention."—Palmer v. McDermaid, 54, Fed. 509; 4 C. C. A. 489.

Vague Phraseology and Multiplicity of Claims

"It is the practice of some solicitors of patents to write claims in vague phraseology, with an idea that vagueness is elasticity, and that elasticity is excellence. They stretch their claims to catch infringers; and are apt to stretch them to the breaking point, by making them vague and elastic enough to cover inventions of prior art, and to be invalidated thereby."—Emerson Co. v. Nimocks, 99 F. R. 739 (1900).

* * *

"It is the practice of some solicitors, to multiply claims, with variant. Thus they hope to hit every competitor, with one claim or another; or to divert them all from competition, by a multiplicity of appearances. But the courts have frequently expressed their disapprobation of multiplying claims unnecessarily and such multiplication is dangerous to validity of patents."—Westinghouse Air Brake Co. v. N. Y. Air Brake Co. Fed. Report 431 (1901).

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ANSUL CHEMICAL CO.
MARINETTE, WISCONSIN

Chilrite, King Kold, Stewart-Warner, Dayton, M & E and Bauer

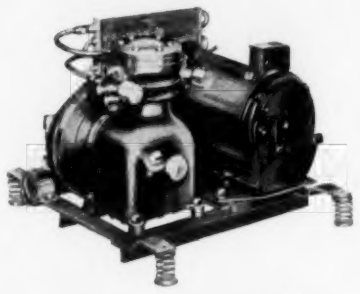
	Chilrite NARRAGANSETT MACHINE CO. Vale St., Pawtucket, R. I.							King Kold ILLINOIS MOULDING CO. 23rd & Western Ave., Chicago, Ill.					Stewart-Warner STEWART-WARNER CORP. 1826-52 Diversey Blvd., Chicago, Ill.				Dayton DAYTON REFRIGERATION CORP. 924 E. Monument Ave., Dayton, Ohio				M & E MERCHANT & EVANS CO. 2035 Washington Ave., Philadelphia, Pa.				Bauer THE BAUER BROS. CO. Springfield, Ohi		
Model or Catalog No.	LP-48	L4	P4	L5	P5	L6	P6	M-4	PL-5	M-5	M-6	PL-7	89	90	91	92	4-A-2	5-A-2	6-A-2	8-A-3	Gyro 6	DeLuxe 12 Gyro 12	DeLuxe 14		40	50	60
CABINET SPECIFICATIONS																											
Overall dimensions, including hardware																											
Height (inches)	51½	54	54	57½	57½	59⅞	59⅞	49⅜	52½	52½	57¼	54½	50	54	61	60½	53	58	58	58	42	57	59⅛	58⅜	51⅛	57½	6
Width (inches)	25	24⅜	24⅜	26⅜	26⅜	30½	30½	24½	24⅛	26	28½	31¾	24	24	28½	32¼	23½	25½	28	32	24½	24½	28½	32¼	24	28½	2
Depth (inches)	20½	20⅝	20⅝	22⅛	22⅛	22¼	23⅛	21½	25½	25½	25½	22¼	23½	24	25⅝	26	20½	22½	24	25	18	18	26⅛	27⅝	24¾	25¾	2
Thickness of insulation																											
Top of cabinet (inches)	2¼	3⅜	3⅜	3½	3½	4⅛	4⅛	2	2	3	3	3	2	2½	3	3	2	3	3	3	2	2	3	3	2	3	3
Sides of cabinet (inches)	2⅛	2¼	2¼	2¼	2¼	3⅜	3⅛	1½	2	3	3	3	2	2	3	3	2	3	3	3	2	2	3	3	2	3	3
Bottom of cabinet (inches)	2⅜	2⅛	2⅛	2½	2½	3	3	1½	2	3	3	3	2½	2½	3	3	2	3	3	3	3	3	3	3	2¼	2¾	2
Inside dimensions of cabinet liner																											
Height (inches)	26¼	27¼	27¼	30	30	32	32	24¼	25⅜	25⅜	30	29¼	21¾	26	29⅜	30½	26¼	29⅜	29⅜	29⅜	20½	35½	29¾	29	26	28	3
Width (inches)	20	19½	19½	20⅜	20⅜	23⅝	23⅝	20½	19½	19½	21½	25¼	19	19	21½	25¼	18	18⅜	21¼	25½	21½	21½	21½	25¼	19	21½	2
Depth (inches)	15½	14½	14½	15½	15½	15⅛	15⅛	15⅜	19	17⅜	17¾	15⅜	16⅝	16⅜	17⅝	17⅝	15¼	16⅜	17⅝	18⅞	13½	13½	17	18½	17⅛	17⅛	17
Thickness of exterior metal (gauge)	20	20	20	20	20	20	20	22	20	20	20	20	22	22	22	22	22	22	22	22	18	18	18	18	22	22	2
Thickness of interior metal (gauge)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	18	18	18	18	18	18	18	20	20	2
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1
STORAGE CAPACITY																											
Gross food storage capacity (cu. ft.)	4.7	4.4	4.4	5.4	5.4	6.6	6.6	4.5	5.5	5.1	6.5	6.8	4.05	4.76	6.6	7.95	4.3	5.2	6.4	8.1	3.5	6.0	6.3	7.9	4.9	6.0	7.1
Net food storage (cu. ft.) (Nema rating)	4.0	3.7	3.7	4.3	4.3	5.4	5.4	4.0	5.0	4.6	5.9	6.2	3.52	4.46	6.15	7.32	3.9	4.9	6.0	7.4	3.0	5.3	5.5	7.0	4.0	5.0	6.0
Number of shelves	3	3	3	5	5	5	5	3	3	3	4	4	2	3	4	4	3	4	4	4	3	6	4	4	3	4	5
Total shelf area (sq. ft.) (Nema rating)	5.4	6.6	6.6	8.7	8.7	10.3	10.3	8.75	9.0	8.6	12.9	11.3	5.0	8.3	11.6	12.7	6.2	9.0	4.0	4.0	6	12	12	14	8.2	11.0	12.5
Greatest distance between any two shelves	5	5¾	5¾	5¾	5¾	5¾	5¾	11¼	11½	11½	10¼	13¼	10	7¼	7⅛	7	6½	7	7	6½	5	5	7	7	6	6	7
Shortest distance between any two shelves	4¼	4¼	4¼	4¼	4¼	4¼	4¼	5½	5½	5½	5	5	5¾	5¾	5⅛	5½	6½	5	5	5½	5	5	5	5	6	5	4
ICE CUBE TRAYS																											
Number of ice cube trays	2	2	2	3	3	3	3	3	3	2	3	4	2	2	3	3	2	2	2	3	3	6	3	3	2	2	3
Inside dimensions of trays (inches)																											
Length (at top of tray)	9¼	9¼	9¼	9¼	9¼	9¼	9¼	10¼	10¼	9⅜	9⅜	10¼	7⅞	9¼	9¼	10½	10¼	10¼	10¼	10¼	7½	7½	9¼	9¼	9½	9½	9½
Width (at top of tray)	5	5	5	5	5	5	5	3⅝	3⅝	5	5	3⅝	3⅞	3¾	3¾	4½	5¾	5¾	5¾	5¾	3½	3½	5	5	5	5	5
Depth (single)	1½	1½	1½	1½	1½	1½	1½	1¼	1¼	1½	1½	1¼	1¼	1¼	1¼	1½	1⅝	1⅝	1⅝	1⅝	1⅝	1⅜	1½	1½	1½	1½	1½
Depth (double)																									...	2⅞	2⅞
Number of cubes produced at one freezing	56	56	56	84	84	84	84	63	63	56	84	84	24	42	63	63	56	56	56	84	45	90	84	84	56	84	112
Weight of ice cubes produced (lbs.)	4	4	4	6	6	6	6	4½	4½	4	6	6¾	2	4	6	7	5	5	5	7½	3	6	7	7	4.3	6.4	8.5
COMPRESSOR SPECIFICATIONS																											
Bore (inches)													1½	1½	1½	1½	1⅛	1⅛	1⅛	1⅛	1	1	1½	1½	1⅝	1⅝	1⅝
Stroke (inches)													1⅝	1⅝	1⅝	1⅝	1¼	1¼	1¼	1¼	¾	¾	1¼	1¼	1⅜	1⅜	1⅜
Standard speed (rpm)													400	500	500	500	800	800	800	800	1725	1725	625	625	340	340	340
Number of cylinders													1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Compressor capacity (lbs.) (ASRE rating)								90	90	90	90	90	69	86	86	86	70	70	70	70	70	70	110	110	63	113	152
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6
Standard motor speed (rpm)													1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1725	1750	1750	1750
Quantity of refrigerant in system (lbs.)	4½	4½	4½	5	5	6	6	4	4	4	4	4	4¼	4¼	4¼	4¼	4	4	4	4	1¼	1¼	4	4	1	1	1
Quantity of lubricant in system	1 qt.	1 qt.	1 qt.	1 qt.	1 qt	1 qt.	1 qt.	26 oz.	26 oz.	26 oz.	26 oz.	26 oz.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	5 oz.	5 oz.	14 oz.	14 oz.	12 oz.	12 oz.	12 oz.
WEIGHT																											
Net weight of complete refrigerator (lbs.)													253	271	330	381	230	285	300	324	200	245	350	386	305	350	365
Total shipping weight (lbs.)								280	325	370	400	380	310	330	400	453	270	325	340	374	235	290	398	450	355	405	425
PRICE																											
F. o. b. factory price								$99.50	139.00	179.00	195.00	197.00	$99.95	149.95	199.95	249.95									$109.50	134.50	159.50
Retail price, without installation													$99.95	149.95	199.95	249.95											
Installed price								$109.50	149.00	Set by distributor							$109.50	129.50	149.50	189.50							
																	$109.50	129.50	149.50	189.50	$119.50	159.50	250.00	275.00			
CABINET MATERIALS																											
Make of cabinet	Seeger							Model M-4—Truscon; all others—Illinois Moulding Co.					Rex				Heinz & Munschauer				Merchant & Evans				Bauer		
Material used for exterior	Metal							Metal					Metal				Metal				Metal				Metal		
Make of exterior metal	Auto body steel							Truscon—Steel; all others—Wood					Furniture Sheet				Auto body stock				Armco				Furniture steel		
Material used for frame	Wood							Armco					Wood				Wood				Steel and wood				Wood		
Make of interior metal								Tinned					Armco				Armco				Armco				Armco		
Finish of shelves	Tinned												Tinned				Tinned				Tinned				Tinned		
INSULATION																											
Make of insulation	Insulite and Dry-Zero							Model M-4 — Thermo-Cel; all others—Dry-Zero					Dry-Zero				Model 4-A-2—Sampso Fibo Cell; all others—Dry-Zero				Dry-Zero				Insulite, Nu-wood or Temlok		
Nature of insulating material	Vegetable							Vegetable					Vegetable				Vegetable				Vegetable				Vegetable		
Bulk or formed slabs	Formed slabs							Formed slabs					Formed slabs				Formed slabs				Formed slabs				Formed slabs		
How is insulation waterproofed													Kraft paper & asphalt				Water-proofed paper				Waterproofed paper				Tarred paper		
Make of waterproofing material													Hydrolene				Parafine								Hydrolene		
FINISH																											
Cabinet finish (exterior)	P models—porcelain; all others—lacquer							Lacquer					Lacquer				Lacquer				Gyro models—enamel; DeLuxe models—porcelain				Lacquer		
Make of exterior finish													Bradley & Vrooman				Acme								Lowe Bros.		
Colors offered as standard	White							White					White				White				White				White		
Colors offered on special order								Model M-4—None; all others—Any color					Black				None								Any color		
Cabinet finish (interior)	Porcelain							Porcelain					Porcelain				Porcelain				Porcelain				Porcelain		
Make of interior finish								Porcelain					Davidson Co.				Lusterlite								Davidson Enamel Products		
HARDWARE																											
Make of hardware								Grand Rapids Brass and Winters & Crampton					Grand Rapids Brass				Grand Rapids Brass				Grand Rapids Brass				Model 40 — Winters & Crampton; others —National Lock		
Process of manufacture	Cast and Stamped							Stamped					Stamped				Stamped				Stamped				Stamped		
Basic metal of hardware	Brass							Brass					Brass				Brass				Brass				Bronze		
Finish of hardware	Chromium							Chromium					Chromium				Chromium				Chromium				Chromium		
DOORS																											
Material used for breaker strip	Formica							Bakelite					Gylac				Bakelite				Masonite				Wood		
Material used for gasket	Rubber							Rubber					Rubber				Rubber composition				Rubber				Model 40—Rubberized cloth; others—rubber		
Make or brand of gasket													Miller												Model 40—Jarrow; all others—Miller		
EVAPORATOR																											
Make of evaporator	Mullins							Mullins or Fedders					Stewart-Warner				Mullins				Merchant & Evans				McCord		
Evaporator construction	Shell												Tubular				Shell				Tubular				Tubular		
Metal used for evaporator	Steel												Brass & Copper				Porcelain-covered steel				Copper				Brass		
Type of refrigerant control	Low side float							Low side float					Low side float				Low side float				Gyro models — expansion valve; DeLuxe models—low side float				Expansion valve		
Make of expansion valve	None							None					None				None				American Radiator				American Radiator		
Make of brine tank	None												None				None				None				None		
Solution used for brine	None												None				None				None						
Type and make of trays	Aluminum							Aluminum					Aluminum								Gyro models—Fedders; DeLuxe models—Merchant & Evans				Lima Sheet Metal Co. and Aluminum Goods Co.		
Dimensions of ice cube (inches)	1¼ x1¼ x1½							Models M-6 & FL-7—1¼x1¼x1½; all others—1-3/16x1-7/16x1¼					Model 89 — 1⅞x1½x1¼; Models 90 & 91—1¼x1¼x1½; Model 92—1½x1½x1½				1¼x1¼x1⅝				Gyro models—1¼x1⅛x1⅜; DeLuxe models—1¼x1¼x1½				1-3/16x1-7/16		
SPECIAL FEATURES																											
	Vegetable tray												Models 90, 91 & 92—Light								Interior light — DeLuxe models Vegetable tray—DeLuxe models						
COMPRESSOR																											
Make of compressor	Chilrite							Illinois Moulding Co.					Zerozone				Dayton				Merchant & Evans				Brunner		
Type of system	Conventional							Conventional					Conventional				Conventional				Conventional				Conventional		
Type of compressor	Rotary							Reciprocating					Reciprocating				Reciprocating				Reciprocating				Reciprocating		
Compressor drive	Direct							Belt					Belt				Belt				Gyro models—direct; Deluxe models—belt				Belt		
Type and make of shaft seal	Rotary seal							Bellows					Bellows				Dayton				Diaphragm				Bellows		
Location of compressor	Below							Below					Below				Below				Below				Below		
CONDENSER																											
Make of condenser	Bush							Fedders and Bush					Bush				McCord				McCord				Brunner		
Fan or natural draft cooling	Fan							Fan					Fan				Fan				Fan				Fan		
Type of condenser	Finned tube							Finned tube					Finned tube				Finned tube				Finned tube				Finned tube		
REFRIGERANT																											
Refrigerant used	Sulphur Dioxide							Sulphur Dioxide					Sulphur Dioxide				Sulphur Dioxide				Sulphur Dioxide				Methyl chloride		
Trade name													Ansul				Ansul								Artic		
Chemical formula	SO_2							SO_2					SO_2				SO_2				SO_2				CH_3Cl		
LUBRICATION																											
Make of compressor lubricant	Kaydol Special							Sunco					Sun No. 2				No. 3 Sunoco				Sun Oil				Brunner		
How often should motor be oiled	Annually							Annually					Annually				Annually				Every three years				Annually		
MOTOR																											
Make of motor	Century							Delco					General Electric				Leland				Wagner				Robbins & Myers		
Type of motor	Repulsion-Induction							Repulsion-Induction					Capacitor				Repulsion-Induction				Repulsion-Induction				Repulsion-Induction		
Method of starting	Direct							Direct					Direct				Direct				Clutch				Direct		
How adapted to odd frequency								Change motor					Change motor				Change motor				Change motor				Change motor		
What additional cost is entailed	Slight							Extra cost of motor					Extra cost of motor				Extra cost of motor				5 per cent				50 cycle—none; all others—$5.65		
How adapted to direct current	Change motor							Change motor					Change motor				Change motor				Change motor				Change motor		
What additional cost is entailed	Slight							Extra cost of motor					Extra cost of motor				Extra cost of motor				None				32 and 115 volts—$2.60; 230 volts—$3.50		
Type of wire or cable used													Rubber covered				Rubber covered				Rubber covered				18-2SJ—Rubber covered		
Make of wire or cable used													Belden				Belden				Belden				Rome Wire Co.		
CONTROL																											
Make of control	Ranco							Ranco					Ranco				Ranco				Ranco				Ranco		
Type of control	Temperature							Temperature					Temperature				Temperature				Temperature				Temperature		
Temperature regulation method	Manual regulator							Manual regulator					Manual regulator				Manual regulator				Manual regulator				Manual regulator		
Make of overload cut-out	Ranco							Ranco					Ranco				Ranco								Ranco		
How is defrosting accomplished	Shut down unit							Shut down unit					Shut down unit				Shut down unit				Shut down unit				Shut down unit		
POLICY																											
Who determintes retail price	Retailer							Outside of Chicago—distributor or retailer					Manufacturer				Manufacturer				Distributor				Manufacturer		
Guarantee period on cabinet	One year							None					One year								One year				Three years		
Guarantee period on system	One year							Three years					Three years								One year				Three years		
By whom serviced	Dealer, distributor or factory							Factory in Chicago; distributors elsewhere					Dealer & distributor								Distributor				Dealer		
Are replacement parts sold to independent service companies	Yes							No					No								Yes				No		

Republic, Napier, Kulair, Commerce, Rice, Mitycold and White Mountain

	Republic REPUBLIC TOOL PRODUCTS CO. Dayton, Ohio						Napier METAL SAW & MACHINE CO., INC. Springfield, Mass.				Kulair KULAIR CORP. 1609 Finance Bldg., Philadelphia, Pa.			Commerce COMMERCE PATTERN FOUNDRY & MACHINE CO. 2211 Grand River Ave., Detroit, Mich.			Rice RICE ELECTRIC REFRIGERATION, INC. 36 Flatbush Ave., Brooklyn, N. Y.			Mitycold MITYCOLD CORP. Cleveland, Ohio	White Mountain MAINE MFG. CO. 46 Bridge St., Nashua, N. H.				
Model or Catalog No.	L-42	L-62	L-82	P-48	P-65	P-83	A-4	A-5	A-6	A-8	A	B	C	4-2-B	5-2-B	7-3-B	P-4 L-4	P-5 L-5	P-6 L-6	19	M-45	M-57	M-70	90	110
CABINET SPECIFICATIONS																									
Overall dimensions, including hardware																									
Height (inches)	52	56¾	58	54	58¾	58	58	58	60¾	60¾	55¼	57¾	57¾	54	57⅛	59⅞	54	57⅛	59⅞	62	58	61¾	61¾	61¾	61¾
Width (inches)	23¾	26¼	32	24	28¼	32¼	25⅜	26⅜	30½	35	25½	32½	32½	24⅜	26⅜	34⅛	24⅜	26⅜	30½	27	25	28	32¼	39½	47
Depth (inches)	22	24	26	26	26¾	27½	22½	22½	22⅛	25	21	24⅜	24⅜	20⅝	22½	23⅛	22¼	23¾	23¾	24	21	23¾	23¾	23¾	23¾
Thickness of insulation																									
Top of cabinet (inches)	3	3	3	2½	3	3	3	3	3	3	3	3	3	2	2½	3	2	2½	3	3⅞					
Sides of cabinet (inches)	3	3	3	2½	3	3	3	3	3	3	2	3	3	2	2½	3	2	2½	3	3⅞					
Bottom of cabinet (inches)	3	3	3	2½	3	3	3	3	3	3	2½	3	3	2	2½	3	2	2½	3	4¼					
Inside dimensions of cabinet liner																									
Height (inches)	26¼	29¾	29¾	26¼	30	30	28⅞	30⅛	32	32	27⅝	29¼	29¼	27½	29⅝	30⅛	27½	30⅛	32	34					
Width (inches)	19	20½	25	17¾	21¼	25	18¾	20½	24	28½	19¾	25¼	25¼	19½	20½	28	19½	20½	23⅜	21					
Depth (inches)	15	16½	17½	18	18	18¾	16	16	16	18	14¾	16	16	15	16	17¾	15	16	15½	18					
Thickness of exterior metal (gauge)	20	20	20	20	20	20	22	20	20	20							22	22	20						
Thickness of interior metal (gauge)	20	20	20	20	20	20	18	18	18	18							22	22	20	20					
Number of refrigerator doors	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	2	2
STORAGE CAPACITY																									
Gross food storage capacity (cu. ft.)	4.7	6.5	8.1	4.8	6.5	8.0	5.1	5.9	7.2	9.5	4.6	6.8	6.8	4.65	5.72	8.3	4.65	5.72	6.78	7.5					
Net food storage (cu. ft.) (Nema rating)	4.1	5.9	7.5	4.2	5.9	7.4	4.2	5.0	6.0	8.0	3.5	5.13	5.13	4.0	5.0	7.0				7.0	4.85	6.2	7.46	9.0	11.0
Number of shelves	3	4	4	3	4	4	3	4	5	5	5	5	5	3	5	5	4	6	6	4	3	3	3	3	3
Total shelf area (sq. ft.) (Nema rating)	7.0	11.0	13.5	8.0	10.0	14.75	6.5	9.5	11.0	16.5	7.88	11.0	11.0	8.12	10.21	15.0	8.12	10.21	12.11	14	9.0	10.0	13.0	14.55	18.35
Greatest distance between any two shelves	6½	6½	7	7	6	6	6	6½	6	6	6	6	6				5½	5½	6	12					
Shortest distance between any two shelves	6	5	5	6½	6	6	5	5	5	5	5	5	5	4¼	4	....	4	4	4⅛	8					
ICE CUBE TRAYS																									
Number of ice cube trays	2	2	3	2	2	3	2	3	3	4	3	4	4	2	2	2	2	3	3	3	2	2	3	4	5
Inside dimensions of trays (inches)																									
Length (at top of tray)	9¼	9¼	9¼	9¼	9¼	9¼	9½	9½	9½	9½	9½	9½	9½	9¼	9¼	9¼	8½	8½	8½	9					
Width (at top of tray)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5⅛	5⅛	5⅛	6					
Depth	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1¼	1¼	1¼	1½	1½	3	1½	1½	1½	2					
Number of cubes produced at one freezing	56	56	84	56	56	84	56	84	84	112	84	112	112	56	56	84	56	84	84	72	49	49	77	105	161
Weight of ice cubes produced (lbs.)	4	4	6	4	4	6	3½	5¼	5¼	7				5	5	7½	3¼	5	5	3	5	5	8	10	16
COMPRESSOR SPECIFICATIONS																									
Bore (inches)											1⅝	1⅝	1⅝												
Stroke (inches)											1⅝	1⅝	1⅝												
Standard speed (rpm)							1740	1740	1740	1740	400	400	400												
Number of cylinders							1	1	1	1	1	1	1												
Compressor capacity (lbs.) (ASRE rating)	90	90	90	90	90	90	95	95	95	95	95	95	95				100	100	100	126	120	120	120	120	120
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-6	1-6	1-6	1-6	1-6
Standard motor speed (rpm)							1740	1740	1740	1740	1725	1725	1725												
Quantity of refrigerant in system (lbs.)	4	4	5	4	4	5	2	2	2	2	3	3	3	1½	1½	1¾	1/3 to 1/2 lbs. each			3	1¼	1¼	1¼	1¼	1¼
Quantity of lubricant in system	20 oz.	20 oz.	20 oz.	20 oz.	20 oz.	20 oz.	1 qt.	1 qt.	1 qt.	1 qt.	1 pt.	1 pt.	1 pt.	8 oz.	8 oz.	8 oz.	½ lb.	½ lb.	½ lb.	20 oz.	½ lb.	½ lb.	½ lb.	½ lb.	½ lb.
WEIGHT																									
Net weight of complete refrigerator (lbs.)	272	331	376	317	362	408	280	310	330	410	290	370	396				250	300	350						
Total shipping weight (lbs.)							320	350	370	450	359	466	492	315	338	440	275	325	375	240					
PRICE																									
F. o. b. factory price							$175	200	240	280										$199.50					
Retail price, without installation														$109.50	149.50	179.50				$199.50					
Installed price																				$199.50					
CABINET MATERIALS																									
Make of cabinet	L models—Illinois; P models—Eagle						Model A-4—Illinois Refrigerator Co.; others—Seeger				Kulair			Seeger			Seeger			Facto Auto Body Co.	Maine				
Material used for exterior	Metal						Metal				Metal			Metal			Metal			Fibre board	Metal				
Make of exterior metal	Armco						Armco				Armco						Furniture steel			Masonite					
Material used for frame							Model A-4 — steel; all others—wood				Wood			Wood			Wood			Wood					
Make of interior metal	Armco						Armco				Armco						Enameling steel			Armco					
Finish of shelves	Tinned						Tinned				Tinned			Tinned			Tinned			Tinned	Tinned				
INSULATION																									
Make of insulation	Dry-Zero						Dry-Zero				Zilem						Seeger special			Masonite and foil					
Nature of insulating material	Vegetable						Vegetable				Vegetable						Vegetable			Vegetable and mineral					
Bulk or formed slabs	Formed slabs						Formed slabs				Formed slabs						Formed slabs			Formed slabs					
How is insulation waterproofed							Paper and sealed				Paper sealed														
FINISH																									
Cabinet finish (exterior)	L models—lacquer; all others porcelain						Lacquer				Porcelain or Lacquer			Lacquer			Porcelain or lacquer			Facto					
Make of exterior finish																	Seeger special			White	White				
Colors offered as standard	White						White				White			White			White			Any color	Any color				
Colors offered on special order											Any color						Any color			Porcelain	Porcelain				
Cabinet finish (interior)	Porcelain						Porcelain				Porcelain			Porcelain			Porcelain			Porcelain					
Make of interior finish							Model A-4—Illinois Refrigerator Co.; others—Seeger										Seeger special								
HARDWARE																									
Make of hardware	National Lock						Model A-4—Grand Rapids Brass; all others—Seeger										National Lock and Winters & Crampton			National Lock					
Process of manufacture	Stamped						Grand Rapids Brass—stamped; Seeger—cast				Stamped						Stamped			Stamped					
Basic metal of hardware	Brass						Brass				Brass						Brass			Brass					
Finish of hardware	Chromium						Chromium				Chromium			Chromium			Chromium			Chromium	Chromium				
DOORS																									
Material used for breaker strip	Tylac						Model A-4 — wood; all others—Panelyte				Wood			Rubber			Formica			Masonite					
Material used for gasket	Rubber						Model A-4—Rubberized cloth; all others—rubber				Rubber			Rubber			Rubber			Rubber					
Make or brand of gasket	Miller						Model A-4 — Wirf; all others—Jarrow				Wirf						Miller			Miller					
EVAPORATOR																									
Make of evaporator	Mullins						Mullins				Kulair			McCord			Rice			Mullins	Fedders				
Evaporator construction	Shell						Shell				Tubular			Tubular			Copper coil wound on casing			Shell	Tubular				
Metal used for evaporator	Steel						Porcelain on steel				Copper			Copper			Copper			Porcelain on steel	Copper and brass				
Type of refrigerant control	Low side float						Low side float				Low side float			Expansion valve			Capillary tube			Low side float	Expansion valve				
Make of expansion valve	None						None				None			Fedders			Rice			None	American Radiator				
Make of brine tank	None						None				None			None			None			None					
Solution used for brine	None						None				None			None			None			None	Rubber				
Type and make of trays	Lima—metal						Mullins aluminum				Kulair			Hoosier						1x1½x2					
Dimensions of ice cube (inches)	1½x1¼x1¼						1⅛x1¼x1½				1¼			1¼x1¼			1¼x1¼x1¼								
SPECIAL FEATURES																	Models L-5 & L-6—Light			Vegetable tray	Vegetable tray				
COMPRESSOR																									
Make of compressor	Auto Compressor Co.						Metal Saw & Machine Co.				Kulair			Commerce			Rice			Mitycold	Sturtevant				
Type of system	Conventional						Conventional				Conventional			Conventional			Conventional			Hermetic	Conventional				
Type of compressor	Reciprocating						Rotary				Reciprocating			Reciprocating			Reciprocating			Reciprocating	Reciprocating				
Compressor drive	Belt						Direct				Belt			Belt			Direct			Direct	Direct				
Type and make of shaft seal							Bellows				Kulair			Sylphon			Cooke Seal			None	Bellows				
Location of compressor	Below						Below				Below			Below			Below			Below	Above				
CONDENSER																									
Make of condenser	McCord						Bush				Bush			McCord			Rice			Mitycold	Fedders				
Fan or natural draft cooling	Fan						Fan				Fan			Fan			Fan			Natural and fan	Fan				
Type of condenser	Finned tube						Finned tube				Finned tube			Finned tube			Finned tube			Finned tube	Finned tube				
REFRIGERANT																									
Refrigerant used	Sulphur Dioxide						Methyl Chloride				Sulphur Dioxide			Sulphur Dioxide			Methyl chloride			Methyl Chloride	Methyl Chloride				
Trade name	Ansul																			Artic	Artic				
Chemical formula	SO_2						CH_3Cl				SO_2			SO_2			CH_3Cl			CH_3Cl	CH_3Cl				
LUBRICATION																									
Make of compressor lubricant	PRK-40—Russian mineral oil						Texaco				PRK-40						Capella			PRK-40					
How often should motor be oiled	Semi-annually						Every 2 or 3 months				Annually			Annually			Semi-annually			Never	Semi-annually				
MOTOR																									
Make of motor	Delco						General Electric				Leland			Howell			General Electric			General Electric and Westinghouse	General Electric				
Type of motor	Repulsion-Induction						Capacitor				Repulsion-Induction			Capacitor			Capacitor			Capacitor	Capacitor				
Method of starting	Direct						Direct				Clutch			Direct			Direct				Direct				
How adapted to odd frequency	Change motor						Change motor				Change motor			Change motor			Motor interchangeable			Not adaptable	Change motor				
What additional cost is entailed							None				Extra cost of motor														
How adapted to direct current	Change motor						Change motor				Change motor			Change motor			Motor interchangeable			Converter	Change motor				
What additional cost is entailed											Extra cost of motor									$15					
Type of wire or cable used							Rubber sheathed																		
Make of wire or cable used							General Electric																		
CONTROL																									
Make of control	Ranco						Ranco or General Electric				Ranco			Ranco			General Electric			Ranco, Cutler-Hammer, General Electric and Bishop-Babcock	General Electric				
Type of control	Temperature						Temperature				Temperature			Temperature			Temperature			Temperature	Temperature				
Temperature regulation method	Manual regulator						Manual regulator				Manual regulator			Manual regulator			Manual regulator			Manual regulator	Manual regulator				
Make of overload cut-out	Ranco										Ranco			Ranco						Same as control	General Electric Thermal				
How is defrosting accomplished	Shut down unit						Shut down unit				Shut down unit			Shut down unit			Between cycles				Shut down unit				
POLICY																									
Who determintes retail price	Manufacturer						Retailer				Retailer						Retailer			Manufacturer					
Guarantee period on cabinet	One year						Three years				Three years						One year			Five years	One year				
Guarantee period on system	Three years						Three years				Three years			One year			Three years			Five years	Three years				
By whom serviced	Dealer or distributor						Dealer				Dealer						Dealer, distributor or factory			Dealer, distributor or factory					
Are replacement parts sold to independent service companies	No						Yes				Yes						Yes			No					

KELLOGG COMPRESSORS
and Refrigeration Units

More than 25 years' experience in air compression enables KELLOGG to offer an extremely compact, quiet and efficient compressor or refrigeration unit for household boxes, water coolers, ice cream cabinets, etc.



Quiet . . . . remarkably free from vibration

Specifications: Model 43

Capacity: Calorimetric tests 120 lbs. I.M.E., at 14 lbs. suction pressure using CH_3CL with 1/6 H.P. motor. A.S.R.E. rating 85 lbs. I.M.E. at 5° F.

Compressor: Single cylinder 1 5/16" bore, 1 3/16" stroke, 500 R.P.M.

Volumetric efficiency: approximately 68%.

Compressor Pulley: 7" diameter . . . furnished with or without belt groove.

Pressed Steel Frame . . . rubber cushion or spring mounting.

Shaft: Hardened steel with eccentric operated connecting rod.

Cylinder and Crankcase: Cast as single unit assuring perfect alignment of crankshaft with piston and connecting rod.

Shaft Seal: Bellows type designed so that seal nose cannot lift off its seat under high crankcase pressures.

Suction and Discharge Valves: Located in removable plate directly under the cylinder head insuring accessibility.

Condenser: Finned tube with 2" diameter receiver underneath—1½ lbs.

Refrigerant: Methyl Chloride.

Diameter of fan: 7".

Motor: 1/6 horsepower, 110 v. 60 cycle, 1 phase Delco motor.

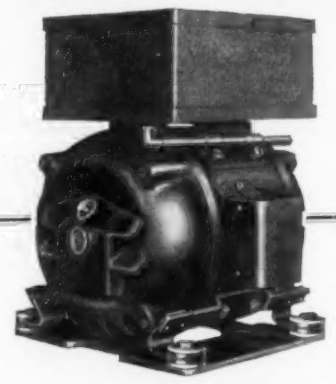
Overall size complete unit: 15" long, 13" wide, 11½" high.

Overall size compressor including shut-off valves: 10¼" high, 8¾" wide, 7" long.

Control: Thermostatic on cooling unit.

KELLOGG MANUFACTURING CO.
300 Humboldt St. Rochester, N. Y.

Also manufacturers of larger Compressors and Units, Air Compressors, Paint Spraying Equipment and Vacuum Pumps.



"THEY KEEP A-RUNNING"

1/6 Horse Power Century Type CP Capacitor Single Phase Motor with Cushion Mounting. Capacitor can be be furnished as separate unit for wall mounting.

Interchangeable Mounting Dimensions

The following types of Century Fractional Horse Power Motors can be furnished for continuous-duty, open-rating service, or totally-enclosed construction, with rigid or cushion mounting:

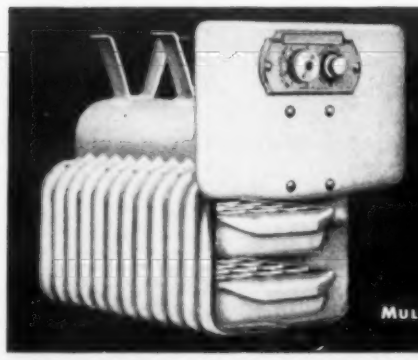
TYPE RS—*Repulsion Start Induction, Single Phase*
TYPE CP—*Capacitor, Single Phase*
TYPE SP—*Split Phase, Resistance and Reactance*
TYPE SC—*Three and Two Phase*
TYPE DM—*Direct Current*

Century MOTORS

CENTURY ELECTRIC COMPANY, 1806 Pine St., St. Louis, Mo.
Offices and Stock Points in Principal U. S. and Canadian Cities

SINGLE PHASE, THREE PHASE AND DIRECT CURRENT MOTORS - MOTOR GENERATOR SETS - ROTARY CONVERTERS - FANS AND VENTILATORS

FOR MORE THAN 28 YEARS AT ST. LOUIS



The MULLINS SHEET METAL EVAPORATOR

Sanitary - Compact Efficient

White Porcelain Enamel

DESIGNS FOR USE WITH HIGH SIDE AND LOW SIDE FLOATS — IMPROVED FAST FREEZING SHELF AT SLIGHTLY INCREASED COST.

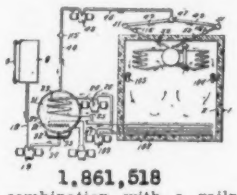
Manufacturers, Write for Details!

MULLINS MANUFACTURING CORPORATION
REFRIGERATION DIVISION
SALEM, OHIO

Review of Latest Patents in the

ISSUED JUNE 7, 1932

1,861,518. REFRIGERATING APPARATUS FOR FREIGHT CARS. Leonard Kay Wright, Long Island, N. Y. Filed July 19, 1928. Serial No. 293,860. 5 Claims. (Cl. 257—7.)



1,861,518

1. In combination with a railroad car, means for heating in the lower part of said car and means for cooling said car including coils in the upper part of said car, said cooling means comprising a refrigerating cycle operated by heat, a single source of heating fluid and means intermediate said heating means and said coils responsive to temperature changes within said car for selectively admitting a heating fluid from said source to said heating means or to a part of said refrigerating cycle.

2. In a car, a flooring perforated at least beneath the cargo-carrying portion of the car, heating means beneath said flooring whereby air may be heated and thence circulated by convection directly upwardly through the floor to the cargo-carrying portion of the car, inclined baffling means within and adjacent the upper portion of said car, and cooling means above said baffling means.

1,861,709. VENTILATING, REFRIGERATING, AND DEHUMIDIFYING APPLIANCE. Charles A. Moore, Edina, Minn. Filed Aug. 9, 1930. Serial No. 474,284. 7 Claims. (Cl. 257—18.)

1. The combination with a structure forming a chamber, of an appliance therein comprising an upright refrigerated conduit, a second upright conduit within the first conduit, partition means between said conduits forming therebetween two upright passageways communicating at their upper ends with the upper portion of the chamber, the second conduit being in communication at its upper end with the outer atmosphere, a third upright conduit within said first conduit opening at its upper end into the upper portion of the chamber and at the lower end thereof into the outer atmosphere, and means for impelling air upwardly through one of the passageways into the upper portion of the chamber, the action of such air impelling means serving to draw air into the said passageway from the lower end of said second conduit and similarly from the other passageway.

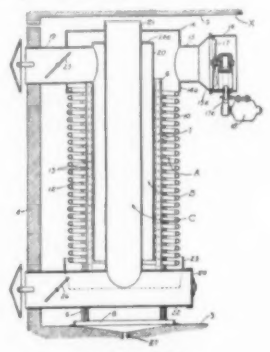
1,861,710. REFRIGERATING AND VENTILATING APPLIANCE. Charles A. Moore, Edina, Minn. Filed Sept. 12, 1930. Serial No. 481,427. Renewed Oct. 24, 1931. 18 Claims. (Cl. 62—134.)

1. The combination with a structure forming a chamber, of an upright appliance located at one end of said chamber medially thereof, said appliance comprising three concentric conduits, each consisting of a refrigerant conducting pipe coiled closely turn upon turn, the inner conduit communicating at its lower end with the lower portion of the intermediate conduit, the outer conduit communicating at its lower end with the lower portion of the chamber, means for forcing air from the outer atmosphere downwardly through said inner conduit, and means for drawing air upwardly through the intermediate and outer conduits and mixing and blowing it into the upper portion of the chamber longitudinally medially thereof.

1,861,763. PROCESS OF TREATING BRINE. George N. Terziev, Solvay, N. Y., assignor to The Solvay Process Co., Syracuse, N. Y., a Corporation of New York. Filed May 13, 1931. Serial No. 537,223. 14 Claims. (Cl. 23—45.)

1. In a process of purifying brine containing ammonia, the step which comprises treating the brine with a halogen to decompose substantially all the ammonia present therein.

1,861,813. REFRIGERATING, DEHUMIDIFYING, AND VENTILATING APPLIANCE. Charles A. Moore, Edina, Minn. Filed Aug. 9, 1930. Serial No. 474,285. 11 Claims. (Cl. 257—18.)



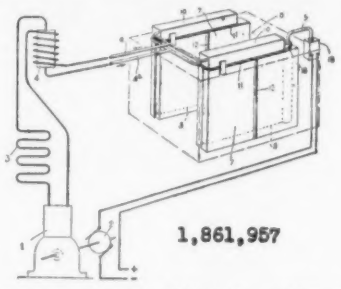
1,861,813

2. The combination with a structure forming a chamber, of an upright refrigerated conduit communicating at its upper end with the upper portion of the chamber, and a second conduit within said first conduit communicating at its upper end with the outer air, both conduits communicating at their lower ends with the lower portion of the chamber.

1,861,875. REFRIGERATOR COOLING STRUCTURE. Worth H. Percival, Des Moines, Iowa, assignor to C. L. Percival & Co., Des Moines, Iowa. Filed March 31, 1930. Serial No. 440,317. 9 Claims. (Cl. 62—89.)

9. In a cooling structure of the kind described, a casing, a cooling chamber unit mounted therein having a bottom, end walls, a side wall and an open side, a movable partition for coacting with the open side having its lower edge spaced from the bottom of the cooling chamber unit, said cooling chamber unit being mounted for sliding movement toward and from said partition.

1,861,957. ARTIFICIAL REFRIGERATION. Jay G. De Remer, Greenwich, Conn., assignor, by mesne assignments, to J. G. De Remer Research Corp., Jersey City, N. J., a Corporation of New Jersey. Filed Dec. 22, 1925, Serial No. 76,961. Renewed Oct. 24, 1930. 9 Claims. (Cl. 62—172.)



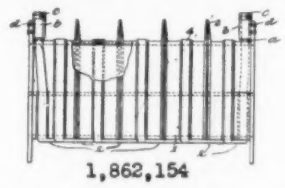
1,861,957

1. The process of refrigeration which includes repeatedly freezing a saturated salt solution while maintaining precipitated salt in a suspended condition in the liquid.

1,861,979. REFRIGERATING APPARATUS. Hans Rohl, Mannheim, Germany, assignor ot Schwarzwaldwerke Lanz, G. m. b. H., Mannheim, Germany. Filed No. 20, 1929, Serial No. 408,466, and in Germany Nov. 30, 1928. 3 Claims. (Cl. 62—118.)

3. In refrigerating apparatus of the absorption-expulsion type, the combination of a vessel containing the absorption material, a heating element arranged within and extending in spaced relationship therewith, a fluid cooling medium, and means for alternately effecting the activation of the heating element and a flow of the cooling medium through the vessel in an annular body surrounding the heating element, said means being operative, while the heating element is activated, to stop the flow of the cooling medium and by the heat generated to effect the expulsion of the body of the cooling medium surrounding the heating element.

1,862,154. HEAT EXCHANGE UNIT. Alexander S. Limpert, Bay Shore, N. Y. Filed Dec. 19, 1929. Serial No. 415,181. 7 Claims. (Cl. 62—126.)



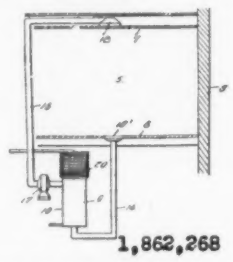
1,862,154

1. In a heat exchanger, the combination comprising a metal body having a chamber therein and a coil of flattened tubing wound around said body, said coil throughout the greater portion of its length having extended line contact throughout the greater portion of its periphery and in planes extending transversely of its longitudinal axis, with the exterior of said shell.

1,862,252. VARIED TEMPERATURE REFRIGERATOR. Frederick A. Berlin, Washington, D. C., assignor to American Chemical Co., a Common-Law Trust of Massachusetts. Filed May 29, 1930. Serial No. 457,363. 4 Claims. (Cl. 62—2.)

1. A refrigerating container comprising a casing having a refrigerant containing compartment formed therein, a plurality of storage compartments located below said refrigerant containing compartment, valve means located between said storage compartments and said refrigerant containing compartment, and thermostatic means for opening and closing said valves.

1,862,268. AIR COOLING SYSTEM. Earl Hoskins, Phoenix, Ariz., assignor of one-third to J. D. Fitzpatrick, Phoenix, Ariz. Filed Sept. 13, 1930. Serial No. 481,783. 3 Claims. (Cl. 62—133.)



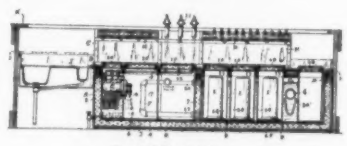
1,862,268

1. An air cooling apparatus comprising a container, a double wall structure arranged within the container and in spaced relation thereto, a by-pass communicating the interior of the container with the interior of the double wall construction, a feed line for discharging a cooling medium on to the double wall construction, an air inlet for the double wall construction and an outlet for the double wall construction.

1,862,330. AUTOMATICALLY REFRIGERATING RECEPTACLE. Philip P. Chapin and William J. Kupec, New York, N. Y. Filed May 31, 1928. Serial No. 281,759. 3 Claims. (Cl. 62—120.)

1. The combination of a receptacle for the utilizable substance, a gas liquefying receptacle enveloping said receptacle, an insulating wall enveloping said gas liquefying receptacle, a gas absorbent receptacle enveloping said wall, and said last two receptacles being in communication with each other.

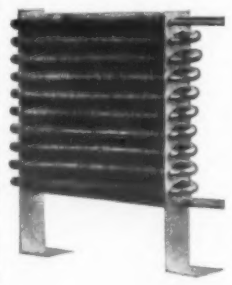
1,862,344. COOLING AND DISPENSING APPARATUS. Frank T. Wiechert, Lakewood, Ohio, assignor of one-half to Robert C. Trimmer, Cleveland, Ohio. Filed May 6, 1929. Serial No. 360,718. 1 Claim. (Cl. 62—101.)



1,862,344

A cooling and dispensing apparatus, comprising a base section including two nested sheet metal shells insulated from each other and divided into separate goods and brine chambers, a plurality of individual refrigerating evaporators, one for each of said chambers, an auxiliary cooling device, associated with said brine chamber extending into said goods chamber, pipe connections for each of said refrigerating evaporators and a conduit for said pipe connections extending lengthwise of one wall of said outer shell and communicating with

(Continued on Page 21, Column 1)



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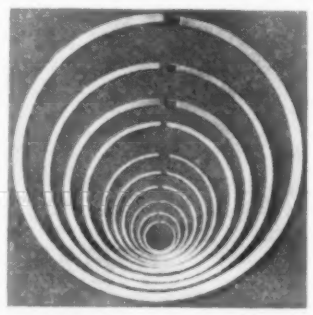

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The Steel or Bronze Piston Ring Corporation
Indianapolis, Indiana

Development of Refrigeration

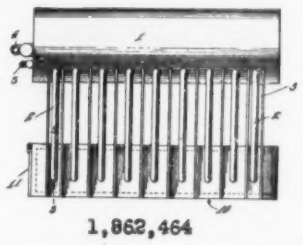
(Continued from Page 20, Column 5)

said refrigerating evaporator, said refrigerating evaporator in said brine chamber being set for substantially lower temperatures than said refrigerating evaporator in said goods chamber.

1,862,395. BOTTLE REFRIGERATOR. Chester A. Frick, Muncie, Ind., assignor to Glascock Brothers Mfg. Co., Muncie, Ind., a Corporation of Indiana. Filed Feb. 2, 1929. Serial No. 337,038. 3 Claims. (Cl. 211—71.)

2. A stand for containers, comprising a pair of end members, each formed of a one-pieced member bent to form a horizontal bridge and a pair of legs connected thereto, top and bottom transversely extending braces extending between the legs, a V-shaped channel member connecting the bottom braces of the end members and located adjacent the legs, a top bracing member extending between the top transversely extending brace on each end member at a point intermediate of the ends of the brace, to form a support for the upper end of a box, the bottom edge of which rests within said V-shaped channel.

1,862,464. REFRIGERATOR. Charles M. Brenner, Shreveport, La. Filed June 24, 1930. Serial No. 463,498. 1 Claim. (Cl. 62—95.)



1,862,464

A refrigerating unit including a boiler with refrigerant containing tubes depending from opposite sides, a freezing compartment, the tubes being connected with opposite side walls of the freezing compartment and communicating with the interior, a container mounted in said compartment and spaced from the walls thereof, between which and said walls the refrigerant is adapted to flow to completely surround said container, and radiating fins connected with the side walls of the container and extending upwardly between the spaced tubes.

1,862,491. REFRIGERATOR. Hermann M. Hessenbruch, Wynnewood, Pa., assignor to Philadelphia Lawn Mower Co., Inc., Philadelphia, Pa., a Corporation of Pennsylvania. Filed March 26, 1931. Serial No. 525,444. 10 Claims. (Cl. 62—91.5.)

1. In a refrigerator designed for use of a refrigerant like solid carbon dioxide, a multiplicity of individual refrigerating chambers; a separate compartment for the refrigerant; and a thermal conductor element formed integrally from a single strip of sheet material and connecting the several refrigerating chambers with the compartment containing the refrigerant.

REISSUE

18,489. VENTILATING FAN. Morris Berman, Brooklyn, N. Y. Original No. 1,838,609, dated Dec. 29, 1931, Serial No. 297,922, filed Aug. 7, 1928. Application for reissue filed Feb. 2, 1932. Serial No. 591,633. 17 Claims. (Cl. 62—129.)

1. Apparatus of the character described, comprising a motor, a fan operated by the motor for directing an air current and means for cooling said air current including a compressor mounted coaxially with said motor, and an evaporating coil having a plurality of turns therein, part of the turns being arranged in front of the fan and part of the turns behind the fan.

ISSUED JUNE 14, 1932

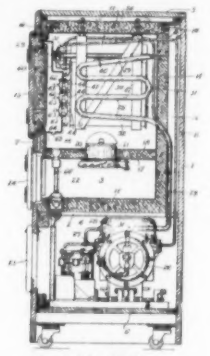
1,862,525. MOLDING DEVICE. Franklin F. Bradley, Chicago, Ill. Filed Sept. 17, 1931. Serial No. 563,298. 4 Claims. (Cl. 62—105.)

1. In a device for molding congealable liquid into blocks including a source of congealable liquid supply, refrigerator means, a pivotally mounted mold, a mold supply receptacle secured to and in spaced relation to the mold and having duct communication therewith, the mold and receptacle being adapted to oscillate into raised and lowered positions with one alternately above the other, the receptacle being adapted to be brought into cooperative relation with the source of supply in its lowered position to receive a supply of liquid and to fill the mold by gravity through its duct communication when in its raised position, and the mold being in cooperative relation with the refrigerator means in its lowered position to congeal the liquid therein into a solidified block.

1,862,604. REFRIGERATOR CAR. Ernest B. Miller, Baltimore, Md., assignor to The Silica Gel Corp., Baltimore, Md., a Corporation of Maryland. Filed April 23, 1928. Serial No. 272,293. 33 Claims. (Cl. 62—117.)

33. In a railway refrigeration car, in combination, a storage compartment having a roof, a floor, and a substantially vertical enclosing wall, refrigeration apparatus including an evaporator in said compartment, and an adsorber unit supported from and outside of said wall.

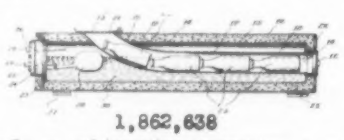
1,862,634. REFRIGERATOR. John R. Replogle, Detroit, Mich., assignor, by mesne assignments, to Kelvinator Corp., Detroit, Mich., a Corporation of Michigan. Original application filed Feb. 28, 1921, Serial No. 448,331, now Patent No. 1,719,024, and in Canada, Feb. 11, 1922. Divided and this application filed May 14, 1927. Serial No. 191,478. 13 Claims. (Cl. 62—116.)



1,862,634

1. In refrigeration apparatus, the combination of a cooling chamber; a brine tank located in said cooling chamber and formed with a horizontally disposed interior food chamber opening through the front wall of the said brine tank; and a guard plate for the front of said cooling chamber formed with an opening to register with the said food chamber; said tank being adjustably supported whereby the desired alignment of the chamber with the opening in said guard plate can readily be secured.

1,862,638. REFRIGERATING APPARATUS FOR BOTTLED GOODS. Charles C. Spreen, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a Corporation of Michigan. Filed April 25, 1927. Serial No. 186,433. 4 Claims. (Cl. 62—126.)



1,862,638

1. In a refrigerating apparatus, a container adapted to serve as an evaporator, a container adapted to surround said evaporator in spaced relation thereto, and a passageway through both of said containers, said passageway comprising a relatively long substantially straight portion and a relatively short curved portion, a door in the end of said outside container adjacent the end of said straight portion, and a door in the cylindrical surface of said outside container adjacent the opposite end thereof and adjacent the end of the curved portion of said passageway.

(To Be Concluded in Next Issue)

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Solicitor of Patents - Refrigeration Engineer
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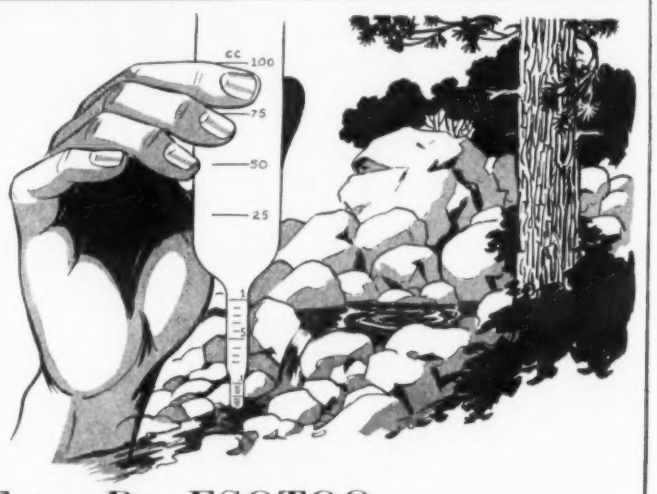

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REFRIGERATION RUBBER WARE
TUBED STRIP AND CHANNEL
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Wagner Repulsion-Start-Induction Motors
The preferred motor for electric refrigerators—rubber-mounted for domestic; rigid-mounted for commercial units. High efficiency, long-hour duty performance, quiet from start to stop—ideally suited for refrigerator duty. All frequencies, voltages interchangeable for given horsepower ratings.

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For ultra-quiet, vibrationless performance—designed especially for domestic refrigerators where absolute silence is demanded. All types of Wagner motors are available with rubber-mountings. Interchangeable with rigid-mounted motors.

Wagner Capacitor Motors
A compact unit—the last word in capacitor motor design, applicable to the majority of refrigerators requiring small fractional horsepower motors. Conduit-box is part of the capacitor-box—no special appendages; all connections made in one box, rigid or rubber-mounted. Interchangeable with other types.

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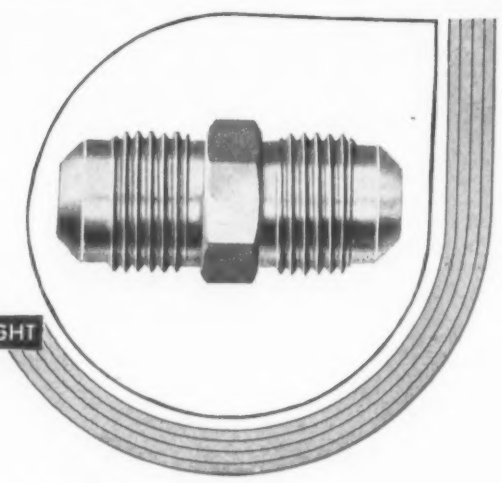
The product of some fifteen years of experience in refrigerator-motor building—designed and built to operate without attention in hermetically-sealed refrigerator units. High efficiency, low operating temperature, specially designed to operate in refrigeration fluids.

For complete description, ask for Bulletin 167

BUILT-IN TYPE

Wagner Electric Corporation
6441 PLYMOUTH AVE., ST. LOUIS, MO.



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Tricold, Gilson, Niagara and North Pole Specifications

Tricold & Chilldare
TRICOLD REFRIGERATOR CORP.
Buffalo, N. Y.

Model or Catalog No.	TP-122	TP-199	CL-88	CL-112	CL-134	CL-141
CABINET SPECIFICATIONS						
Overall dimensions, including hardware						
Height (inches)	64	69⅛	55	58¾	61½	63½
Width (inches)	29¼	35¼	26¾	28½	32	36½
Depth (inches)	28½	28½	24¼	24⅞	27¼	26½
Thickness of insulation						
Top of cabinet (inches)	3	3	3	3	3½	3½
	U. C. L. C.	U. C. L. C.*				
Sides of cabinet (inches)	3 4	3 4	3	3	3½	3½
Bottom of cabinet (inches)	2 5	2 5	3	3	3½	3½
Inside dimensions of cabinet liner	U. C. L. C.	U. C. L. C.*				
Height (inches)	20 10½	26¼ 12¼	27½	28	30¼	33¼
Width (inches)	22 20	28 26	19½	21½	24	29½
Depth (inches)	19⅞ 17⅞	19⅞ 17⅞	16	17	18¼	17⅝
Thickness of exterior metal (gauge)	18	18	18	18	18	18
Thickness of interior metal (gauge)	18	18	18	18	18	18
Number of refrigerator doors	2	2	1	1	1	2
STORAGE CAPACITY						
Gross food storage capacity (cu. ft.)	7.41	12.21	4.94	5.97	7.66	10.10
Net food storage (cu. ft.) (Nema rating)	5.85	10.18	4.05	4.87	6.17	7.9
Number of shelves	3	4	4	4	4	5
Total shelf area (sq. ft.) (Nema rating)	12.21	19.91	8.81	11.22	13.43	14.11
Greatest distance between any two shelves	12¾	10¾	12½	11½	12	12
Shortest distance between any two shelves	4⅞	4	5⅛	4	5⅞	6
ICE CUBE TRAYS						
Number of ice cube trays	3	3	2	3	4	5
Inside dimensions of trays (inches)						
Length (at top of tray)	9¼	9¼	9¼	9¼	9¼	9¼
Width (at top of tray)	5⅛	5⅛	5⅛	5⅛	5⅛	5⅛
Depth	1½	1½	1½	1½	1½	1½
Number of cubes produced at one freezing	84	84	56	84	84	140
Weight of ice cubes produced (lbs.)	6	6	4	6	8	10
COMPRESSOR SPECIFICATIONS						
Bore (inches)	1½	1¾	1½	1½	1½	1½
Stroke (inches)	1¼	1¼	1¼	1¼	1¼	1¼
Standard speed (rpm)	430	430	430	430	430	430
Number of cylinders	1	1	1	1	1	1
Compressor capacity (lbs.) (ASRE rating)	120	166	120	120	120	120
Motor size (hp.)	1-6	1-4	1-6	1-6	1-6	1-6
Standard motor speed (rpm)	1725	1725	1725	1725	1725	1725
Quantity of refrigerant in system (lbs.)	1	1½	1	1	1	1
Quantity of lubricant in system	¾ pt.	¾ pt.	¾ pt.	¾ pt.	¾ pt.	¾ pt.
WEIGHT						
Net weight of complete refrigerator (lbs.)						
Total shipping weight (lbs.)	575	675	375	405	470	540
PRICE						
F. o. b. factory price						
Retail price, without installation	$360	470	179	198	248	300
Installed price						
CABINET MATERIALS						
Make of cabinet	Rex					
Material used for exterior	Metal					
Make of exterior metal	Armco					
Material used for frame	Wood					
Make of interior metal	Armco					
Finish of shelves	Tinned					
INSULATION						
Make of insulation	Balsam Wool					
Nature of insulating material	Vegetable					
Bulk or formed slabs	Formed slabs					
How is insulation waterproofed	Hydrolene treated paper					
Make of waterproofing material	Hydrolene					
FINISH						
Cabinet finish (exterior)	TP models—porcelain; CL models—lacquer					
Make of exterior finish						
Colors offered as standard	White					
Colors offered on special order	None					
Cabinet finish (interior)	Porcelain					
Make of interior finish						
HARDWARE						
Make of hardware	Grand Rapids Brass					
Process of manufacture	Cast					
Basic metal of hardware	Brass					
Finish of hardware	Chromium					
DOORS						
Material used for breaker strip	Bakelite					
Material used for gasket	Rubber					
Make or brand of gasket	Johns-Manville					
EVAPORATOR						
Make of evaporator	American Radiator					
Evaporator construction	Cast-in Coil					
Metal used for evaporator	Aluminum					
Type of refrigerant control	Expansion valve					
Make of expansion valve	American Radiator					
Make of brine tank						
Solution used for brine						
Type and make of trays	Aluminum					
Dimensions of ice cube (inches)	1¼x1 3/16x1⅛					
SPECIAL FEATURES	TP models—interior light CL models—Vegetable tray TP models—low-temperature compartment					
COMPRESSOR						
Make of compressor	Universal Cooler					
Type of system	Conventional					
Type of compressor	Reciprocating					
Compressor drive	Belt					
Type and make of shaft seal	Metal seal					
Location of compressor	Below					
CONDENSER						
Make of condenser	Bush					
Fan or natural draft cooling	Fan					
Type of condenser	Finned tube					
REFRIGERANT						
Refrigerant used	Methyl Chloride					
Trade name	Artic					
Chemical formula	CH_3Cl					
LUBRICATION						
Make of compressor lubricant	Argon					
How often should motor be oiled	Quarterly					
MOTOR						
Make of motor	Wagner					
Type of motor	Repulsion-Induction					
Method of starting	Direct					
How adapted to odd frequency	Change motor					
What additional cost is entailed	None					
How adapted to direct current	Change motor					
What additional cost is entailed	None					
Type of wire or cable used	16-2—S J cord rubber covered					
Make of wire or cable used						
CONTROL						
Make of control	TP models—Penn; CL models—Ranco					
Type of control	Temperature					
Temperature regulation method	TP models—not variable; CL models—manual regulator					
Make of overload cut-out	TP models—Penn; CL models—Ranco					
How is defrosting accomplished	Not required on TP; shut down CL units					
POLICY						
Who determines retail price	Manufacturer					
Guarantee period on cabinet	One year					
Guarantee period on system	Three years					
By whom serviced	Distributor					
Are replacement parts sold to independent service companies	Yes					

*L. C.—lower compartment; U. C. upper compartment.

Snow Bird
GILSON MFG. CO., LTD.
Guelph, Ont., Can.

Model or Catalog No.	5S	5	7	9	10	23	30
CABINET SPECIFICATIONS							
Overall dimensions, including hardware							
Height (inches)	57¼	57¼	59¼	65¼	61¾	92½	85
Width (inches)	24¼	24¼	29	29½	38½	48½	63½
Depth (inches)	20	20	20¼	20¼	23½	28¼	30½
Thickness of insulation							
Top of cabinet (inches)	3	3	3	3	3	2	2
Sides of cabinet (inches)	2½	2½	2½	2½	2½	2	2
Bottom of cabinet (inches)	3	3	3	3	3	2	2
Inside dimensions of cabinet liner							
Height (inches)	28½	28½	30½	36½	33		
Width (inches)	19	19	23½	24½	33		
Depth (inches)	16¼	16¼	16¼	16¼	16		
Thickness of exterior metal (gauge)	22	22	22	22	22		
Thickness of interior metal (gauge)	22	22	22	22	22	22	22
Number of refrigerator doors	1	1	1	1	2	3	6
STORAGE CAPACITY							
Gross food storage capacity (cu. ft.)	5.0	5.0	7.0	8.6	10.0	23.0	30.0
Net food storage (cu. ft.) (Nema rating)	4.2	4.2	6.1	7.2	8.8		
Number of shelves	3	3	3	4	5		
Total shelf area (sq. ft.) (Nema rating)	8.57	8.57	10.57	13.8	20.7	24.0	29.0
ICE CUBE TRAYS							
Number of ice cube trays	2	2	2	2	3	0	0
Inside dimensions of trays (inches)							
Length (at top of tray)	9⅜	9⅜	9⅜	9⅜	9⅜	0	0
Width (at top of tray)	5⅛	5⅛	5⅛	5⅛	5⅛	0	0
Depth	1⅛	1⅛	1½	1½	1½	0	0
Number of cubes produced at one freezing	56	56	56	56	84	0	0
Weight of ice cubes produced (lbs.)	2	2	2	2	3	0	0
COMPRESSOR SPECIFICATIONS							
Bore (inches)							
Stroke (inches)							
Standard speed (rpm)							
Number of cylinders							
Compressor capacity (lbs.) (ASRE rating)	160	160	160	190	190	230	230
Motor size (hp.)	1-6	1-6	1-6	1-6	1-4	1-4	1-4
Standard motor speed (rpm)							
Quantity of refrigerant in system (lbs.)	4¼	4½	4½	5	5	6	6
Quantity of lubricant in system	18 oz.	18 oz.	18 oz.	18 oz.	22 oz.	12 oz.	12 oz.
WEIGHT							
Net weight of complete refrigerator (lbs.)	295	310	360	395	500	950	1250
Total shipping weight (lbs.)	360	370	411	480	575	1160	1450
PRICE							
F. o. b. factory price		$215	248	290	385	490	575
Retail price, without installation		$215	248	290	385	490	575
Installed price		$215	248	290	385	490	575
CABINET MATERIALS							
Make of cabinet	Models 23 and 30—Eureka; others—Renfrew						
Material used for exterior	Eureka—wood; Renfrew—metal						
Make of exterior metal							
Material used for frame	Wood						
Make of interior metal	Armco						
Finish of shelves	Tinned						
INSULATION							
Make of insulation	Eureka—cork; Renfrew—fibre board						
Nature of insulating material	Vegetable						
Bulk or formed slabs	Formed slabs						
How is insulation waterproofed							
Make of waterproofing material							
FINISH							
Cabinet finish (exterior)	Lacquer						
Make of exterior finish							
Colors offered as standard	White						
Colors offered on special order	Eureka—natural wood; Renfrew—none						
Cabinet finish (interior)	Models 5-S, 23 and 30—enamel; all others—porcelain						
Make of interior finish							
HARDWARE							
Make of hardware	Grand Rapids Brass						
Process of manufacture	Stamped						
Basic metal of hardware	Brass						
Finish of hardware	Chromium						
DOORS							
Material used for breaker strip	Wood						
Material used for gasket	Rubber						
Make or brand of gasket							
EVAPORATOR							
Make of evaporator	Gilson						
Evaporator construction	Shell						
Metal used for evaporator	Brass and copper						
Type of refrigerant control	Low side float						
Make of expansion valve	None						
Make of brine tank	None						
Solution used for brine	None						
Type and make of trays							
Dimensions of ice cube (inches)	1¼x1 3/16						
SPECIAL FEATURES							
COMPRESSOR							
Make of compressor	Gilson						
Type of system	Conventional						
Type of compressor	Reciprocating						
Compressor drive	Belt						
Type and make of shaft seal	Bishop & Babcock—bellows						
Location of compressor	Below						
CONDENSER							
Make of condenser	Court						
Fan or natural draft cooling	Fan						
Type of condenser	Finned tube						
REFRIGERANT							
Refrigerant used	Sulphur Dioxide						
Trade name							
Chemical formula	SO_2						
LUBRICATION							
Make of compressor lubricant	Suniso						
How often should motor be oiled	Semi-annually						
MOTOR							
Make of motor	Leland						
Type of motor	Repulsion-Induction						
Method of starting	Direct						
How adapted to odd frequency	Change motor						
What additional cost is entailed	None						
How adapted to direct current	Change motor						
What additional cost is entailed	None						
Type of wire or cable used							
Make of wire or cable used							
CONTROL							
Make of control	Bishop & Babcock						
Type of control	Temperature						
Temperature regulation method	Manual regulator						
Make of overload cut-out	Bishop & Babcock						
How is defrosting accomplished	Shut down unit						
POLICY							
Who determines retail price	Model 5-S—dealer; all others—manufacturer						
Guarantee period on cabinet	One year						
Guarantee period on system	One year						
By whom serviced	Dealer						
Are replacement parts sold to independent service companies	Yes						

Niagara
HEINZ & MUNSCHAUER CO.
Buffalo, N. Y.

Model or Catalog No.	2N4	2N5	2N6	3N6	3N8	6310WP
CABINET SPECIFICATIONS						
Overall dimensions, including hardware						
Height (inches)	53	58	58	58	58	58
Width (inches)	23½	25½	28	28	32	33
Depth (inches)	20½	22½	24	24	25	22
Thickness of insulation						
Top of cabinet (inches)	2	2	2	2	2	2
Sides of cabinet (inches)	2	2	2	2	2	2
Bottom of cabinet (inches)	2	2	2	2	2	2
Inside dimensions of cabinet liner						
Height (inches)	26	29	29	29	29	30
Width (inches)	18¾	18¾	21¼	21¼	25¼	25¼
Depth (inches)	15⅝	16⅝	17¾	17¾	18¾	17
Thickness of exterior metal (gauge)	20	20	20	20	20	20
Thickness of interior metal (gauge)	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	1	1	2
STORAGE CAPACITY						
Gross food storage capacity (cu. ft.)	4.4	5.3	6.4	6.4	8.0	7.45
Net food storage (cu. ft.) (Nema rating)	4.0	5.0	6.0	6.0	7.6	7.05
Number of shelves	3	4	4	4	4	4
Total shelf area (sq. ft.) (Nema rating)	6.5	9.0	11.7	11.7	13.6	11.71
Greatest distance between any two shelves	6½	7	7	7	6½	12
Shortest distance between any two shelves	6½	5	5	5	5½	6½
ICE CUBE TRAYS						
Number of ice cube trays	2	2	2	3	3	3
Inside dimensions of trays (inches)						
Length (at top of tray)	10¼	10¼	10¼	10¼	10¼	10¼
Width (at top of tray)	5¾	5¾	5⅝	5⅝	5⅝	5⅝
Depth	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝
Number of cubes produced at one freezing	56	56	56	84	84	84
Weight of ice cubes produced (lbs.)	5	5	5	7½	7½	7½
COMPRESSOR SPECIFICATIONS						
Bore (inches)	1⅛	1⅛	1⅛	1⅛	1⅛	1⅛
Stroke (inches)	1¼	1¼	1¼	1¼	1¼	1¼
Standard speed (rpm)	800	800	800	800	800	800
Number of cylinders	1	1	1	1	1	1
Compressor capacity (lbs.) (ASRE rating)						
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6
Standard motor speed (rpm)	1725	1725	1725	1725	1725	1725
Quantity of refrigerant in system (lbs.)	3½	3½	3½	5½	5½	5½
Quantity of lubricant in system	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt.
WEIGHT						
Net weight of complete refrigerator (lbs.)						
Total shipping weight (lbs.)	268	327	341	346	373	387
PRICE						
F. o. b. factory price						
Retail price, without installation						
Installed price						
CABINET MATERIALS						
Make of cabinet	Niagara					
Material used for exterior	Metal					
Make of exterior metal						
Material used for frame	Wood					
Make of interior metal	Armco					
Finish of shelves	Tinned					
INSULATION						
Make of insulation	Model 2N4—Sampson Fibro Cell; all others—Dry-Zero					
Nature of insulating material	Vegetable					
Bulk or formed slabs	Formed slabs					
How is insulation waterproofed	Dry-Zero—waterproofed paper					
Make of waterproofing material						
FINISH						
Cabinet finish (exterior)	Model 6310WP—Porcelain; all others—lacquer					
Make of exterior finish	Porcelain—Lusterlite; Lacquer—Acme					
Colors offered as standard	White					
Colors offered on special order						
Cabinet finish (interior)	Porcelain					
Make of interior finish	Lusterlite					
HARDWARE						
Make of hardware	Grand Rapids Brass					
Process of manufacture	Stamped					
Basic metal of hardware	Brass					
Finish of hardware	Chromium					
DOORS						
Material used for breaker strip	Model 2N4—Masonite; others—Bakelite					
Material used for gasket	Rubber composition					
Make or brand of gasket						
EVAPORATOR						
Make of evaporator	Mullins					
Evaporator construction	Shell					
Metal used for evaporator	Porcelain on steel					
Type of refrigerant control	Low side float					
Make of expansion valve	None					
Make of brine tank	None					
Solution used for brine	None					
Type and make of trays	Aluminum					
Dimensions of ice cube (inches)	1¼x1⅛x1½					
SPECIAL FEATURES						
COMPRESSOR						
Make of compressor	Conventional					
Type of system	Reciprocating					
Type of compressor	Belt					
Compressor drive						
Type and make of shaft seal	Below					
Location of compressor						
CONDENSER						
Make of condenser	Fan					
Fan or natural draft cooling	Finned tube					
Type of condenser						
REFRIGERANT						
Refrigerant used	Sulphur Dioxide					
Trade name						
Chemical formula	SO_2					
LUBRICATION						
Make of compressor lubricant						
How often should motor be oiled	Every 2 or 3 months					
MOTOR						
Make of motor	Leland					
Type of motor	Repulsion-Induction					
Method of starting	Direct					
How adapted to odd frequency	Change motor					
What additional cost is entailed						
How adapted to direct current	Change motor					
What additional cost is entailed						
Type of wire or cable used	Rubber covered					
Make of wire or cable used	Tirex					
CONTROL						
Make of control	Ranco					
Type of control	Temperature					
Temperature regulation method	Manual regulator					
Make of overload cut-out	Ranco					
How is defrosting accomplished	Shut down unit					
POLICY						
Who determines retail price						
Guarantee period on cabinet	None					
Guarantee period on system	Three years					
By whom serviced	Minor repairs—dealer or distributor; all others—factory					
Are replacement parts sold to independent service companies	Yes					

North Pole
NORTH POLE CORP.
Belleville, Ill.

Model or Catalog No.	L51	51	61	72	81	92
CABINET SPECIFICATIONS						
Overall dimensions, including hardware						
Height (inches)	56	59	60	60	64	64
Width (inches)	24	26	30	30	33	36
Depth (inches)	25	27	25	26	27	28
Thickness of insulation						
Top of cabinet (inches)	2	3	3	3	3	3
Sides of cabinet (inches)	2	3	3	3	3	3
Bottom of cabinet (inches)	2	3	3	3	3	3
Inside dimensions of cabinet liner						
Height (inches)	27	27	28	28	32	32
Width (inches)	19	19	23	26	26	29
Depth (inches)	18	18	17	18	19	20
Thickness of exterior metal (gauge)	20	20	20	20	20	20
Thickness of interior metal (gauge)	20	20	20	20	20	20
Number of refrigerator doors	1	1	1	2	1	2
STORAGE CAPACITY						
Gross food storage capacity (cu. ft.)	5.34	5.34	6.33	7.58	8.66	10.74
Net food storage (cu. ft.) (Nema rating)	4.8	4.8	5.6	6.85	7.74	9.82
Number of shelves	3	3	3	4	4	5
Total shelf area (sq. ft.) (Nema rating)	9.1	9.1	16.3	16.5	20.0	26.3
Greatest distance between any two shelves	7	7	7½	13	6½	13
Shortest distance between any two shelves	6½	6½	6	5½	6½	5¼
ICE CUBE TRAYS						
Number of ice cube trays	3	3	4	4	5	5
Inside dimensions of trays (inches)						
Length (at top of tray)	9	9	10½	10½	12½	12½
Width (at top of tray)	3¾	3¾	3¾	3¾	3⅞	3⅞
Depth	1¼	1¼	1¼	1¼	1⅜	1⅜
Number of cubes produced at one freezing	18	18	21	21	21	21
Weight of ice cubes produced (lbs.)	3¾	3¾	5½	5½	9	9
COMPRESSOR SPECIFICATIONS						
Bore (inches)	1¼	1¼	1¼	1¼	1⅝	1⅝
Stroke (inches)	1¼	1¼	1⅝	1⅝	1⅝	1⅝
Standard speed (rpm)	600	600	280	280	320	320
Number of cylinders	1	1	2	2	2	2
Compressor capacity (lbs.) (ASRE rating)	84	84	156	156	215	215
Motor size (hp.)	1-6	1-6	1-6	1-4	1-4	1-4
Standard motor speed (rpm)	1750	1750	1750	1750	1750	1750
Quantity of refrigerant in system (lbs.)	7	7	7½	7½	8½	8½
Quantity of lubricant in system	1 pt.	1 pt.	1 pt.	1 pt.	1⅝ pt.	1⅝ pt.
WEIGHT						
Net weight of complete refrigerator (lbs.)						
Total shipping weight (lbs.)	331	360	395	440	495	570
	381	410	445	495	550	625
PRICE						
F. o. b. factory price						
Retail price, without installation	$109.50	129.50	190.00	210.00	250.00	300.00
Installed price						
CABINET MATERIALS						
Make of cabinet	North Pole					
Material used for exterior	Metal					
Make of exterior metal	Model L-51—furniture steel; all others—Armco					
Material used for frame	Wood					
Make of interior metal	Armco					
Finish of shelves	Tinned					
INSULATION						
Make of insulation	Dry-Zero					
Nature of insulating material	Vegetable					
Bulk or formed slabs	Formed slabs					
How is insulation waterproofed	Waterproofed paper					
Make of waterproofing material						
FINISH						
Cabinet finish (exterior)	Model L-51—enamel; others—porcelain					
Make of exterior finish						
Colors offered as standard	Model L-51—Berry Bros.; all others—North Pole					
Colors offered on special order	White					
Cabinet finish (interior)	None					
Make of interior finish	Porcelain					
HARDWARE						
Make of hardware	North Pole					
Process of manufacture						
Basic metal of hardware	Winters & Crampton					
Finish of hardware	Cast and stamped					
	Brass					
	Chromium					
DOORS						
Material used for breaker strip	Formica					
Material used for gasket	Rubber					
Make or brand of gasket	Dennis					
EVAPORATOR						
Make of evaporator	Fedders					
Evaporator construction	Tubular					
Metal used for evaporator	Copper					
Type of refrigerant control	Low side float					
Make of expansion valve	None					
Make of brine tank	None					
Solution used for brine	None					
Type and make of trays	Fedders					
Dimensions of ice cube (inches)	1-9/16x1-3/16x1¼—1-5/16x1¾x1⅜					
SPECIAL FEATURES						
COMPRESSOR						
Make of compressor	North Pole					
Type of system	Conventional					
Type of compressor	Reciprocating					
Compressor drive	Belt					
Type and make of shaft seal	Seal ring					
Location of compressor	Below					
CONDENSER						
Make of condenser	Rome					
Fan or natural draft cooling	Fan					
Type of condenser	Finned tube					
REFRIGERANT						
Refrigerant used	Sulphur Dioxide					
Trade name						
Chemical formula	SO_2					
LUBRICATION						
Make of compressor lubricant	Alcaid					
How often should motor be oiled	Semi-annually					
MOTOR						
Make of motor	Emerson					
Type of motor	Capacitor					
Method of starting	Direct					
How adapted to odd frequency	Change motor					
What additional cost is entailed	50 cycle—none; 25 cycle—$10.00					
How adapted to direct current	Change motor					
What additional cost is entailed	$5.00					
Type of wire or cable used	Rubber covered					
Make of wire or cable used						
CONTROL						
Make of control	Ranco					
Type of control	Temperature					
Temperature regulation method	Manual regulator					
Make of overload cut-out	Ranco					
How is defrosting accomplished	Shut down unit					
POLICY						
Who determines retail price	Dealer					
Guarantee period on cabinet	Lacquer—one year					
Guarantee period on system	Three years					
By whom serviced	Dealer, distributor and factory					
Are replacement parts sold to independent service companies	Yes					

Model or Catalog No.	**Lincoln** SOUTHERN CAL. ENG. CO. Los Angeles, Calif. L-4	L-5	L-6	P-4	P-5	P-6	**Bohn** BOHN REFRIGERATOR CO. St. Paul, Minn. BE4-7	BE6-10 BE8-13	BE10-13 BE16-22			**Grinnell** GRINNELL WASHING MACHINE CO. Grinnell, Iowa L	F	G	S	7-T	**Crosley** CROSLEY RADIO CORP. Cincinnati, Ohio C-35	C-45	C-55	**Devon-Air** DEVON MFG. CO. Brighton, Mass 14	11	**Jewett** THE JEWETT REFRIGERATOR CO. 2 Letchworth St., Buffalo, N. Y. JK-55	JK-65 Deluxe 80	Deluxe 100		
CABINET SPECIFICATIONS																											
Overall dimensions, including hardware																											
Height (inches)	54	57½	59⅞	54	57½	59⅞	52¾	58⅝	59¼	62¾	70¼	56	57½	61½	61	61	52	58½	58½	71	63	56⅛	60¼	67⅛	67½		
Width (inches)	24⅜	26⅜	30½	24⅜	26⅜	30½	25¼	25¼	34½	37¼	40¼	23½	25½	28¾	32¼	32¼	24¾	25¾	31¾	35½	35	25⅛	28⅛	40⅛	42⅛		
Depth (inches)	20⅝	22⅛	22⅛	20⅝	22⅛	22⅛	20¾	20¾	21¼	23¼	26½	22½	23½	27	27¾	27¾	20	20¾	21¾	28	28	21⅛	22⅛	25⅛	25⅛		
Thickness of insulation																											
Top of cabinet (inches)	2	2½	3	2	2½	3						2½	3	3	3	3	2	2	2	3	3	2½	3	5¼	5¼		
Sides of cabinet (inches)	2	2½	3	2	2½	3						2½	3	3	3	3	2½	3	3½	3	3	2½	3	5¼	5¼		
Bottom of cabinet (inches)	2	2½	3	2	2½	3						2½	3	3	3	3	3	3½	3½	4	4	2½	3	5¼	5¼		
Inside dimensions of cabinet liner																											
Height (inches)												26¾	29	30	29	29	23½	29¼	29¼	28½	22	28	31	†38	38		‡38
Width (inches)												19¼	19⅛	22½	25⅝	25⅝	19½	19½	23½	29	29	19½	21½	†12½	12½		‡14½
Depth (inches)												15	16½	18	19½	19½	14⅝	14⅝	14⅝	19	19	16½	16½	†16½	16½		‡16½
Thickness of exterior metal (gauge)												22	22	22	22	22	20 & 22	†.037 and .031		22	22	22	22	18	18		
Thickness of interior metal (gauge)												20	20	20	20	20	20	†.037	†.037	22	22	18	18	*1¼	*1¼		
Number of refrigerator doors	1	1	1	1	1	1						1	1	1	1	2	1	1	1	3	3	1	1	3	3		
STORAGE CAPACITY																											
Gross food storage capacity (cu. ft.)	4.65	5.72	6.78	4.65	5.72	6.78	4	6	8	10	16	4.47	5.3	7.0	8.3	8.3	...	4.83	5.82	10.6	9	5.2	6.4	10.0	12.0		
Net food storage (cu. ft.) (Nema rating)	4	5	6	4	5	6						4.0	4.6	6.46	7.23	7.23	3.5	4.5	5.5	9	7	4.6	5.7	8.0	10.0		
Number of shelves												3	3	4	4	4	3	4	5	8	6	3	3	5	5		
Total shelf area (sq. ft.) (Nema rating)	8.12	10.21	12.11	8.12	10.21	12.11	7	10	13	18	22	7.88	9.5	10.9	13.4	13.4	7.0	9.35	10.5	15.33	11.5	9.8	10.7	11.0	13.0		
Greatest distance between any two shelves												7	7	7½	6½	6½	12¼	6⅛	6⅛	10.5	10.5	Shelves		11	11		
Shortest distance between any two shelves												6	3	5	6	6	5	5¼	5¼	5	5	Adjustable		7	7		
ICE CUBE TRAYS																											
Number of ice cube trays	2	2	3	2	2	3	3	3	4	5	5	2	3	3	4	4	2	3	5	6	6	2	3	5	5		
Inside dimensions of trays (inches)																											
Length (at top of tray)	9¼	9¼	9¼	9¼	9¼	9¼						10⅛	10⅛	10⅛	10⅛	10⅛	10¾	10¾	10¾	13	13	9⅜	9⅜	9⅜	9⅜		
Width (at top of tray)	5	5	5	5	5	5						3¼	3¼	3¼	3¼	3¼	4⅛	4⅛	4⅛	5¼	5¼	5⅛	5⅛	5⅛	5⅛		
Depth	1½	1⅛	1½	1½	1½	1½						1¼	1¼	1¼	1¼-2⅝	1¼-2⅝	1¼	1¼	1¼	1¼	1¼	1½	1½	1½	1½		
Number of cubes produced at one freezing	56	56	84	56	56	84	30	63	84	105	105	42	63	84	105	105	42	63	105	240	240	56	84	140	140		
Weight of ice cubes produced (lbs.)	4.1	4.1	6.15	4.1	4.1	6.15	4.0	7.5	9.0	12.0	12.0	3	4¼	5	6½	6½	2¾	4½	7½	20	20						
COMPRESSOR SPECIFICATIONS																											
Bore (inches)	1½	1½	1½	1½	1½	1½						1⅝	1⅝	1⅝	1⅝	1⅝	1¼	1½	1½	4	4	1-5/16	1-5/16	1-5/16	1-5/16		
Stroke (inches)	1¼	1¼	1¼	1¼	1¼	1¼						1-3/16	1-3/16	1-3/16	1-3/16	1-3/16	1⅜	1⅜	1⅜	1	1	1-3/16	1-3/16	1-3/16	1-3/16		
Standard speed (rpm)	400	400	400	400	400	400						526	525	525	525	525	525	525	525	300	300	500	500	500	500		
Number of cylinders	1	1	1	1	1	1						1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Compressor capacity (lbs.) (ASRE rating)	90	90	90	90	90	90	125	125	125	175	175	119	119	119	119	119		65*	85*	135	135	85	85	85	85		
Motor size (hp.)	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-4	1-6	1-6	1-6	1-6	1-6	1-8	1-6	1-6	1-4	1-4	1-6	1-6	1-6	1-6		
Standard motor speed (rpm)	1720	1720	1720	1720	1720	1720						1725	1725	1725	1725	1725	1730	1730	1730	1750	1750	1750	1750	1750	1750		
Quantity of refrigerant in system (lbs.)	2	2	2	2	2	2	2	2	2	2	2	1½	1½	1¾	1¾	2	1¼	1¼	2	3 pts.	3 pts.	1	1	1	1		
Quantity of lubricant in system	1 lb.	1 lb.	1 lb.	1 lb.	1 lb.	1 lb.	1 pt.	1 pt.	1 pt.	1 pt.	1 pt	½ pt.	½ pt.	½ pt.	½ pt.	½ pt.	10 oz.	15 oz	15 oz.			⅞ pt.	⅞ pt.	⅞ pt.	⅞ pt.		
WEIGHT																											
Net weight of complete refrigerator (lbs.)	267	295	348	275	308	360	335	377	473	655		270	270	315	319	328	...	245	287	375	350	335	415	1200	1300		
Total shipping weight (lbs.)	275	300	360	290	325	375						310	328	360	388	397	...	312	350	450	425	385	465	1300	1400		
PRICE																											
F. o. b. factory price	$85.50	99.00	117.00	94.50	108.00	130.50						$99.50					$89.50	99.50	139.50	Not established yet		$129.50	179.50	540.00	590.00		
Retail price, without installation																				Not established yet							
Installed price																				Not established yet							
CABINET MATERIALS																											
Make of cabinet	Seeger						Bohn					Grinnell					Rex			Jewett		Jewett					
Material used for exterior	Metal											Metal					Metal			Metal		Metal					
Make of exterior metal												Auto body					Furniture steel			Auto body steel		Models JK-55 and JK-65—Stretcher-level steel; all others—Allegheny					
Material used for frame	Wood																					Wood					
Make of interior metal	Armco											Metal					Wood			Wood		Models JK-55 and JK-65—Armco; all others—solid porcelain ware					
Finish of shelves	Tinned											Armco					Armco			Auto body steel		Tinned					
												Tinned					Tinned			Tinned							
INSULATION																											
Make of insulation	Dry-Zero						Dry-Zero					Dry-Zero and Maizewood					Model C-35 Balsam Wool and Dry-Zero All others—Dry-Zero			Dry-Zero		Models JK-55 and JK-65—Temlok; all others—Cork board					
Nature of insulating material	Vegetable						Vegetable					Vegetable					Vegetable			Vegetable		Vegetable					
Bulk or formed slabs	Formed slabs						Formed slabs					Formed slabs					Formed slabs			Formed slabs		Formed slabs					
How is insulation waterproofed												Dry-Zero—sealed with hydrolene					Hydrolened			Waterproofed paper		Water-proofed Kraft					
Make of waterproofing material												Hydrolene					Hydrolene										
FINISH																											
Cabinet finish (exterior)	L models—lacquer; P models—Porcelain						Porcelain					Lacquer					Lacquer			Lacquered body—porcelain door		Models JK-55 and JK-65—Lacquer; all others—Porcelain					
Make of exterior finish												Grand Rapids and Dupont					Bradley Vrooman			French gray		Lacquer—Lowe Bros.					
Colors offered as standard	White						White					White					White			Porcelain		White					
Colors offered on special order												Any color					None					None					
Cabinet finish (interior)	Porcelain						Porcelain					Porcelain					Porcelain					Models JK-55 and JK-65—Porcelain; all others—Solid Porcelain Ware					
Make of interior finish												Ferro										Solid Porcelain Ware—Jewett					
HARDWARE																											
Make of hardware	Seeger											National Lock					Winters & Crampton			Devon		Models JK-55 and JK-65—Grand Rapids Brass; all others—Dent Hardware Co.					
Process of manufacture	Cast											Stamped					Stamped			Cast		Grand Rapids Brass—Stamped; Dent Hardware Co.—Cast					
Basic metal of hardware	Brass						Brass					Brass					Brass			Gun metal		Brass					
Finish of hardware	Chromium						Chromium					Chromium					Chromium			Old fashioned hammer		Chromium					
DOORS																											
Material used for breaker strip	Bakelite											Formica					Wood			Odorless Bakelite		Models JK-55 and JK-65—Aluminum; all others—Wood					
Material used for gasket	Rubber											Rubber					Rubber			Sponge rubber		Rubber					
Make or brand of gasket												Miller & Jarrow Products					Miller			Devon							
EVAPORATOR																											
Make of evaporator	Lincoln						Sunbeam					Grinnell					Crosley			None		McCord					
Evaporator construction	Tubular						Tubular					Tubular					Shell					Shell and tube					
Metal used for evaporator	Copper											Copper					Steel					Copper					
Type of refrigerant control	Expansion valve						Expansion valve					Expansion valve					Capillary tube			None		Expansion valve					
Make of expansion valve	American Radiator						American Radiator					American Radiator					None			None		Detroit Lubricator					
Make of brine tank							None					None					None			Devon							
Solution used for brine							None					None					None			Ethelyne Glycol							
Type and make of trays	Aluminum											Grinnell aluminum					Aluminum			Aluminum		Aluminum Goods Mfg. Co.					
Dimensions of ice cube (inches)	1¼x1½											1¼x1¼x1½					1⅛x1⅜x1⅛			1¼ cube		1¼x1-3/16x1½					
SPECIAL FEATURES																	Model C-55—interior light			Separate ice chamber—no frost—controlled humidity							
COMPRESSOR																											
Make of compressor	Lincoln						Sunbeam					Grinnell					Crosley			Devon		Kellogg					
Type of system	Conventional						Conventional					Conventional					Conventional			Conventional		Conventional					
Type of compressor	Reciprocating						Rotary					Reciprocating					Reciprocating			Reciprocating		Reciprocating					
Compressor drive	Belt						Direct					Belt or direct					Belt			Belt		Belt					
Type and make of shaft seal	Rotary Seal Co.											Bellows					Seal ring			Bellows		Bellows					
Location of compressor	Below						Top					Above					Above			Below		Below					
CONDENSER																											
Make of condenser	Bush											Bush or Modine					McCord			None		Bush					
Fan or natural draft cooling	Fan						Fan					Fan					Fan			Fan		Fan					
Type of condenser	Finned tube						Finned					Finned tube					Finned tube					Finned tube					
REFRIGERANT																											
Refrigerant used	Sulphur Dioxide						Sulphur Dioxide					Sulphur Dioxide					Sulphur Dioxide			Air		Methyl Chloride					
Trade name	Ansul											Ansul															
Chemical formula	SO_2						SO_2					SO_2					SO_2					CH_3Cl					
LUBRICATION																											
Make of compressor lubricant	Sun oil						Argon oil					PRK—Russian					Sunisо			Borne and Socony		Stanco					
How often should motor be oiled	Monthly						Semi-annually					Quarterly					Annually			Semi-annually		Quarterly					
MOTOR																											
Make of motor	Delco						Century					General Electric and Westinghouse					Delco			General Electric, Wagner or Century		Delco					
Type of motor	Repulsion-Induction						Repulsion-Induction					Capacitor					Repulsion-Induction			Repulsion-Induction or capacitor		Repulsion-Induction					
Method of starting	Direct						Direct					Direct					Unloader			Direct		Direct					
How adapted to odd frequency	Change motor						Change motor					Change motor					Change motor			Change motor		Change motor					
What additional cost is entailed	Extra cost of motor											Extra cost of motor					None			None		$7.50					
How adapted to direct current	Change motor						Change motor					Change motor					Change motor			Change motor		Change motor					
What additional cost is entailed	Extra cost of motor											Extra cost of motor					None			None		$7.50					
Type of wire or cable used												No. 16 braided rubber covered					S. J. Wire Rubber Covered			Rubber		Rubber covered					
Make of wire or cable used												Anaconda								Tirex		General Electric					
CONTROL																											
Make of control	Ranco											Cutler-Hammer					Ranco			Cutler-Hammer or Penn		Ranco					
Type of control	Temperature						Temperature					Temperature					Temperature			Temperature		Temperature					
Temperature regulation method	Manual regulator						Manual regulator					Manual regulator					Manual regulator			Manual regulator		Automatic					
Make of overload cut-out	Ranco											Cutler-Hammer					Ranco			Westinghouse		Ranco					
How is defrosting accomplished	Shut down unit						Shut off unit					Shut down unit					Shut down unit			Not required		Shut down unit					
POLICY																											
Who determines retail price	Retailer											Distributor and retailer								Not established yet		Manufacturer					
Guarantee period on cabinet	One year						Three years					One year					One year			Not established yet		One year					
Guarantee period on system	Three years											One year					One year			Not established yet		One year					
By whom serviced	Dealer											Distributor and factory					Dealer			Not established yet		Distributor					
Are replacement parts sold to independent service companies	Yes											Yes					No			Not established yet		No					

*At zero lb. gauge.
†Inches

†Two compartments of same dimensions
‡Two compartments
*Solid porcelain ware